AMERICAN JOURNAL OF ORTHODONTICS

OFFICIAL PUBLICATION OF
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ITS COMPONENT SOCIETIES, AND
THE AMERICAN BOARD OF ORTHODONTICS

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TABLE OF CONTENTS ON PAGE 2

Vol. 47 JANUARY, 1961 No. 1

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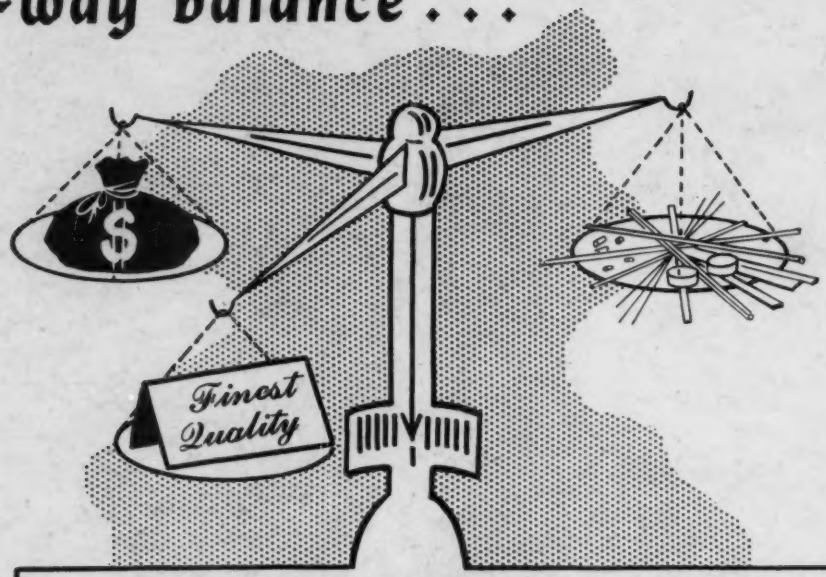
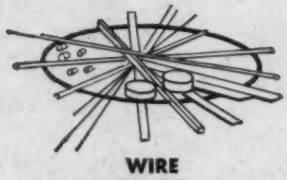


ORTHOLOY

NEW! Superior Economy Alloy



WIRE
BANDS
TUBES
TUBING
BAND MATERIAL

Finer Quality: Strength, toughness, versatility and a permanent high lustre, — characteristics equalled only in higher priced alloys.

Greater Economy: Light weight and low rate. More bands per pennyweight. More feet per ounce of band material, wire and tubing.

Wider Variety: Bands in 24 sizes, 2 thicknesses. Band materials in 7 widths, 4 thicknesses. Ortho Wire and Tubing in 8 round gages, 3 rectangular sizes and all standard sizes of half-round or square.

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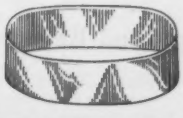
Jan

PREFORMED ANTERIOR BANDS



Baker Preformed Anterior Bands are made of Nickel Chrome Band Material .0035 gauge, 1/8" or 3/32" wide, 14 sizes A to N in increments of 1/64".

When you acquire the knack of choosing the right sizes of Baker Preformed Bands they easily form over the teeth to a tight fit under any good Band Driver or pushing instrument.

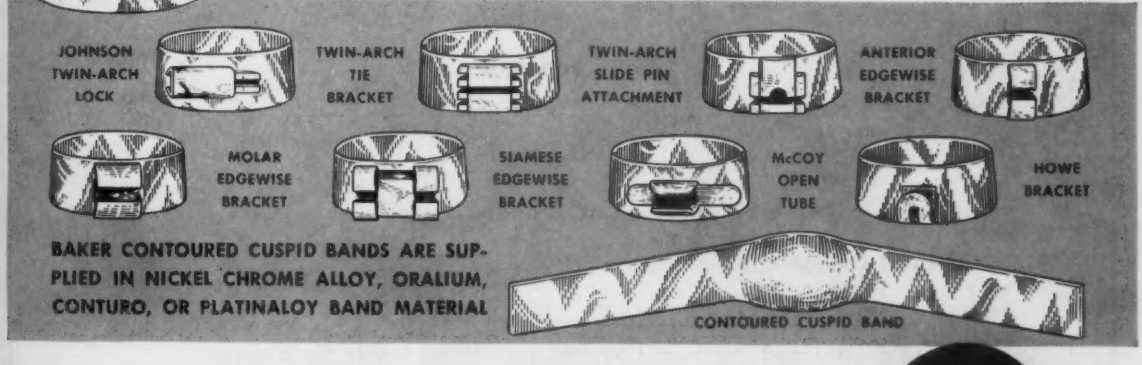
They are a great time saver and eliminate soldering or welding, grinding and polishing, and at the same time provide a smooth polished surface to the tongue.

They are supplied plain or with any of our precious metal or steel attachments, locks or brackets attached as illustrated.

When supplied with genuine Johnson Twin Wire Locks attached, any genuine Johnson Cap anywhere in the world can be used on your case. The caps are very easy to start in place.

Notice the perfectly milled edgewise brackets and all our other locks and brackets are solidly attached to the bands without the use of bulky welding flanges.

Note the very low cost of these in our price list. ★ ★



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CONTENTS FOR JANUARY, 1961

American Journal of Orthodontics

Original Articles

Editorial

Report

Department of Orthodontic Abstracts and Reviews

News and Notes

Officers of Orthodontic Societies

(Editorial and Business Communications on inside back cover)

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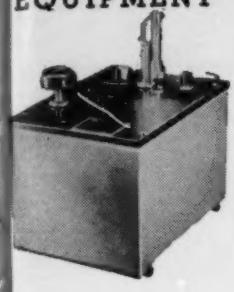
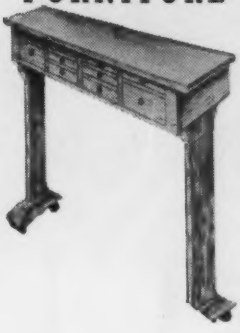
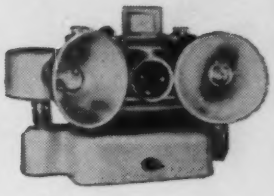


FURNITURE



OPERATING AIDS

PHOTOGRAPHY



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Dear Doctor:

Have you 5 minutes to look through the catalogue we sent you a few months ago? There are a number of items, exclusively ours, that will assist you in saving hours of "Chair Time."

New brackets—New attachments —New tubes — New materials — New pliers—New aids.

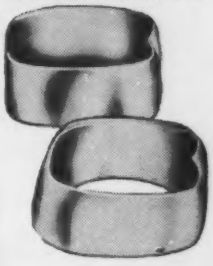
Cordially yours,

Betta Orthodontic Supplies

ORTHO WIRES

ATTACHMENTS

MOLAR BANDS



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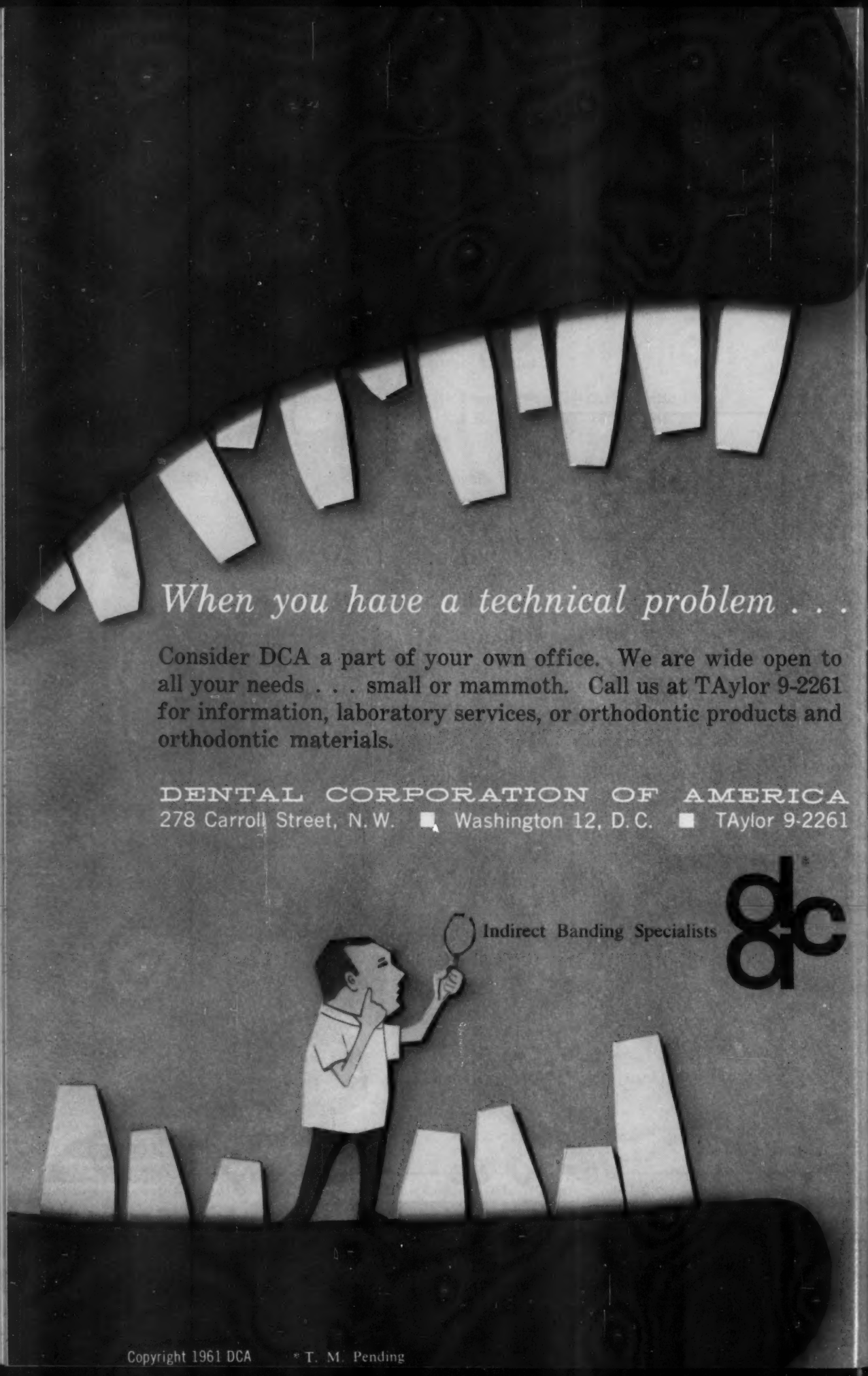
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Consider DCA a part of your own office. We are wide open to all your needs . . . small or mammoth. Call us at TAylor 9-2261 for information, laboratory services, or orthodontic products and orthodontic materials.
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the formation of a corporation organized by and for Orthodontists to design, manufacture, and distribute the materials, instruments, and equipment for the practice of orthodontics.

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ORMCO dedicates all of its facilities to meet the demands of the discriminating doctor for the finest products that modern research, skilled engineering, and experienced management can offer.

ORMCO's trademark borrows from Greek mythology the goddess of perfection, something ORMCO will never achieve but shall always strive for.

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Arches, preformed round
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Bracket, Form fitting
*Bracket
*Buccal tube
*Buccal tube, combination
Coil springs
*Elastics
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*Molar hooks
Stops and spacers
Tubing
Wire
SUPPLIES
Acrylic material
Articulating paper
Cement
*Elastics container
Elastic envelopes
Expansion screws
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Power tool accessory kits
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Pre-assembled
*The O.M.C. wishes to express their gratitude to the members of the Research Advisory Committee who contributed so generously to make these products possible.
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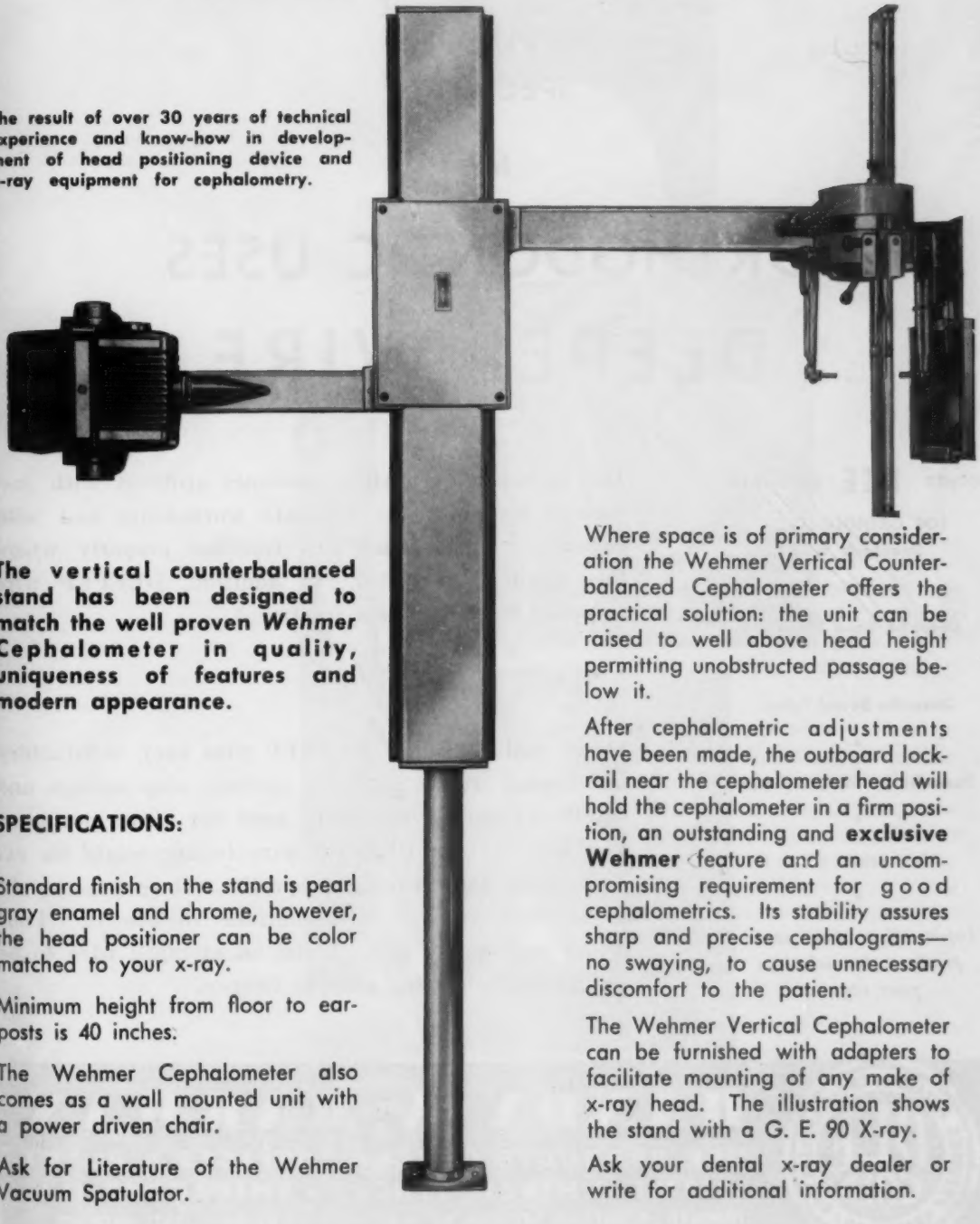
Vertical Counterbalanced Cephalometer

The result of over 30 years of technical experience and know-how in development of head positioning device and x-ray equipment for cephalometry.



The vertical counterbalanced stand has been designed to match the well proven *Wehmer* Cephalometer in quality, uniqueness of features and modern appearance.

SPECIFICATIONS:

Standard finish on the stand is pearl gray enamel and chrome, however, the head positioner can be color matched to your x-ray.

Minimum height from floor to ear-posts is 40 inches.

The Wehmer Cephalometer also comes as a wall mounted unit with a power driven chair.

Ask for Literature of the Wehmer Vacuum Spatulator.

Where space is of primary consideration the Wehmer Vertical Counterbalanced Cephalometer offers the practical solution: the unit can be raised to well above head height permitting unobstructed passage below it.

After cephalometric adjustments have been made, the outboard lock-rail near the cephalometer head will hold the cephalometer in a firm position, an outstanding and **exclusive Wehmer** feature and an uncompromising requirement for good cephalometrics. Its stability assures sharp and precise cephalograms—no swaying, to cause unnecessary discomfort to the patient.

The Wehmer Vertical Cephalometer can be furnished with adapters to facilitate mounting of any make of x-ray head. The illustration shows the stand with a G. E. 90 X-ray.

Ask your dental x-ray dealer or write for additional information.

B. F. WEHMER

6715 Olmsted Ave., Chicago 31, Illinois, U.S.A.
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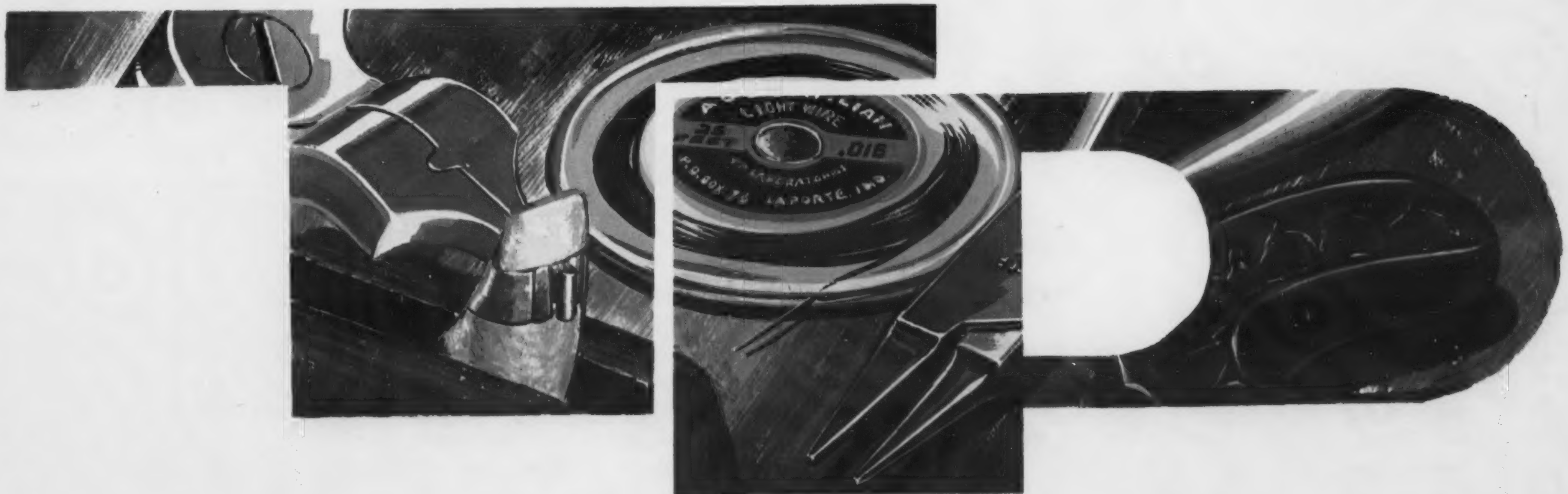


TURN THE PAGE . . .

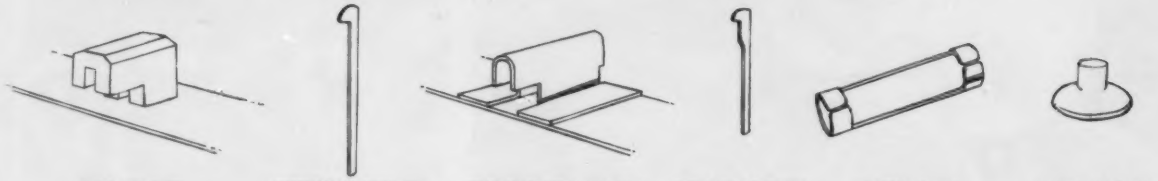
Be On The Lookout For...

This is a familiar expression made popular by every motion picture or TV actor who ever played the part of a police communications officer.

We'll borrow the term to alert you to the fact that T-P Laboratories, Inc. is presently distributing the all new CATALOG 600.

"Be on the lookout for" the latest products used in the Light Wire Technique – information concerning the T-P Positioner – Indirect Banding – new products – and products which have stood the test of time.

CATALOG 600 - a continuing effort to serve the Orthodontic Profession.



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TP LABORATORIES, INC.

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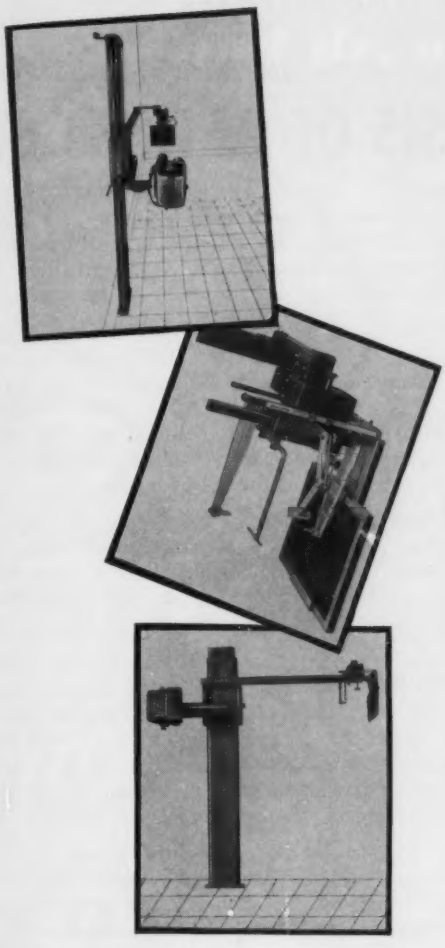
the **only** complete x-ray unit for orthodontists



The CephalometriX is the first complete, compact x-ray unit ever designed specifically for producing sharp, brilliant cephalograms and intra-oral radiographs in the orthodontic office.

Designed and manufactured by Universal X-ray Products, Inc., one of the largest producers of self-contained x-ray equipment in the world.

The CephalometriX is the first unit of its kind to be produced on a production line basis in a modern, air conditioned plant with the very latest precision equipment.

The CephalometriX eliminates the old-fashioned procedure of fastening individual components to the wall. IT HAS REVOLUTIONIZED PROCEDURES OF ORTHODONTIC RADIOGRAPHY!

SEND TODAY for complete information and down-to-earth prices.

The CephalometriX is made for and distributed by—

MOSS X-ray and Medical Equipment Co.
1672 West Ogden Avenue
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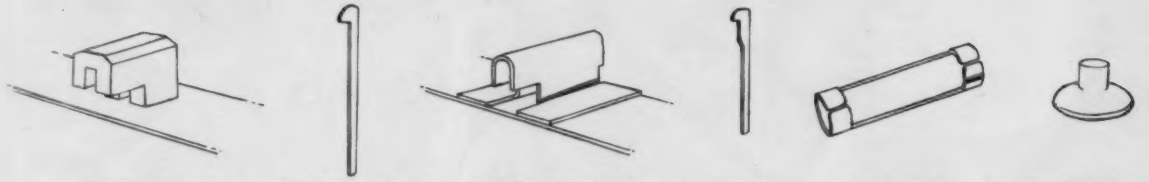

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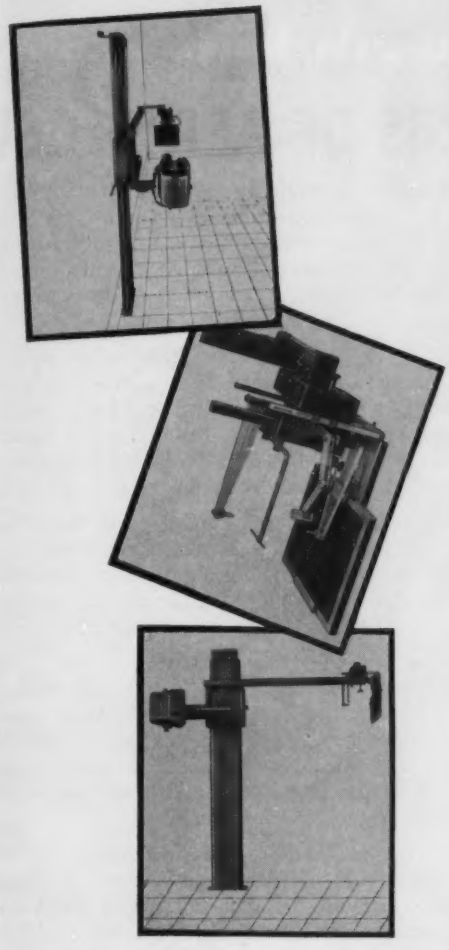

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Learn how to identify such newly recognized diseases as:

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Atypical hyperplasias in the lung
Viral hepatitis
Postnecrotic cirrhosis of the liver
Fibrocystic disease of the pancreas
Varying effects of pancreatic islet cell tumors
Hashimoto's thyroiditis
Relationship of giant cell pneumonia and measles
Amniotic fluid embolism
Fibrous dysplasia of bone
Eosinophilic granuloma of bone

Review the changing concepts of these vascular diseases:

Endarterial thrombi in the pathogenesis of atheroma
Intimal vascularization and hemorrhage in atherosclerosis

Gain new understandings of these diseases resulting from improved cytologic diagnosis:

Hemangiopericytoma
Alveolar soft part sarcoma
Mesenchymoma
Keratoacanthoma
Juvenile melanoma

As the only frequently revised, concise and yet complete and authoritative pathology guidebook available, SYNOPSIS OF PATHOLOGY, just released in a new 5th edition, is the only book that can keep you fully informed on all of the current developments in all areas of general and special pathology.

For this new edition, the book has been thoroughly revised to reflect the increase or decrease in incidence of some diseases, discoveries of new pathological entities, changes in the fundamental nature or our understanding of certain diseases and many other advances and discoveries in such specific areas as are listed in the column on the left.

This popular book is a classic in its own right. Never has one man presented so much information on all areas of pathology in so little space. It is so complete, so concisely presented and so well illustrated, that it has a universal appeal shared by few other publications in pathology.

You will find that the first few chapters cover basic principles of pathology. For example, you'll review how inflammation, repair, and regeneration take place; you'll understand more about retrograde changes which are disturbances of metabolism as demonstrated by atrophy and injury by ionizing irradiation; and you'll read about the latest ideas on disturbances of circulation.

Later, bacterial infection is thoroughly discussed and all of the effects on the body of pathologic bacteria are fully brought out. Specific organisms, such as streptococcus and staphylococcal infections are thoroughly discussed and their important relationship to wound infection is clarified. Spirochetal and venereal diseases, mycotic and protozoal and helminthic infections and infestations are thoroughly described. Chemical poisons, nutritional disturbances, vitaminoses and disturbances of growth are also covered in this broad first section of the book on general pathology.

The remaining 13 chapters of the book give you a well illustrated outline, with sufficient detail, of all of the diseases affecting the various systems of the body—cardiovascular, gastrointestinal, respiratory, endocrine, reticuloendothelial, etc.—all expressing the most current facts and accepted opinions in each area.

By W. A. D. ANDERSON, M.A., M.D., F.A.C.P., F.C.A.P., Professor of Pathology, University of Miami School of Medicine; Director of Pathology Laboratories, Jackson Memorial Hospital, Miami, Florida. Just published. 5th edition, 876 pages, 4⅞" x 7⅝", 414 text illustrations, 4 color plates. Price, $9.25.

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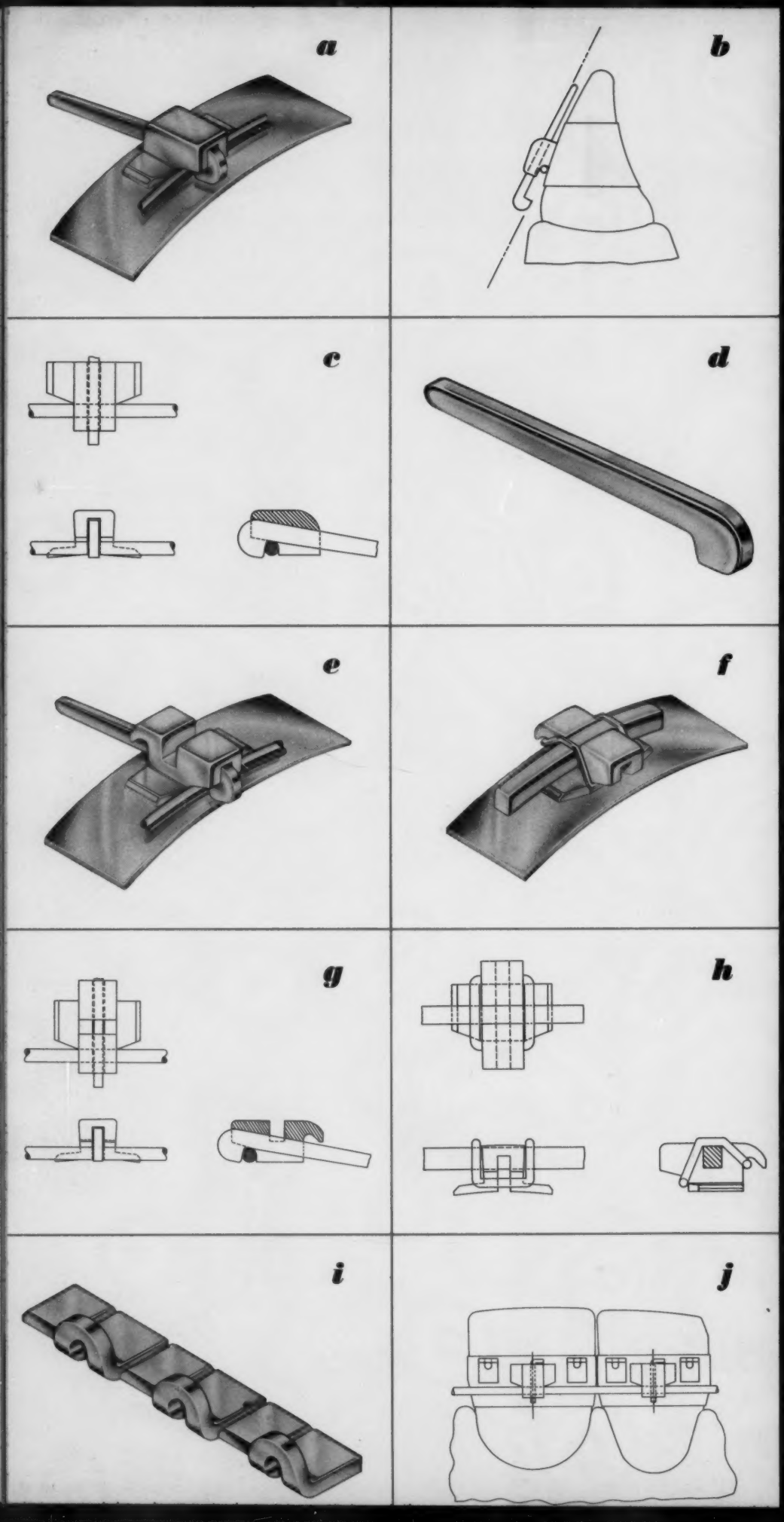
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new* begg/chun-hoon regular bracket

Designed exclusively for the Light-Wire Technique . . . meets all requirements of Dr. Begg's philosophy. A weldable stainless steel bracket with improved design features. Angulated lock pin slot — permits fast and easy insertion and removal of pins without injury to gingival tissue. Clipped welding flanges — do not restrict light-wire arch. Milled type bracket — strong and streamlined. Standard ribbon arch type lock pin may be used. Pre-cured base. Available pre-welded to band of your choice.

UT-860

stamped lock pin

Made for use with either the Begg/Chun-Hoon regular or combination brackets — available in either stainless steel or brass.

UT-861 Brass
UT-862 Stainless Steel

new* begg/chun-hoon combination bracket

The combination bracket incorporates all the essential features of both the Begg light-wire and edgewise brackets — can be used interchangeably for both techniques. Now in transfer cases, continuous treatment is possible in either light-wire or edgewise. Treatment can be started in one technique, and if patients transfer, can be finished in the other technique if desired. Angulated lock pin slot. Fast, easy insertion and removal of pins, without injury to gingival tissue. Ample room for edgewise ligature tie wire. Milled type bracket — for accuracy and strength. Clipped welding flanges — do not restrict light-wire arch. Standard ribbon arch lock pins may be used. Pre-curved base. Available pre-welded to band of your choice.

UT-850 .018 Edgewise slot
UT-950 .022 Edgewise slot

right angle eyelet

A stamped sheet metal eyelet, small yet easy to thread. Furnished in strips of one dozen for easy handling, and scored to break off after welding. Large opening — easy threading. May be mounted close to incisal edge of band. Spacing of eyelets can be matched to individual tooth size, shape and position. Ample strength. Low overall height.

UT-160

*Patent No. 2,713,726
Other Patents Applied For
Manufactured Under License

...introducing the new Oscar T. M. REG.

FACE BOW

In designing this bow we asked Orthodontists all over the country what they wanted most in a face bow. Here are the features requested and incorporated in the Oscar face bow.

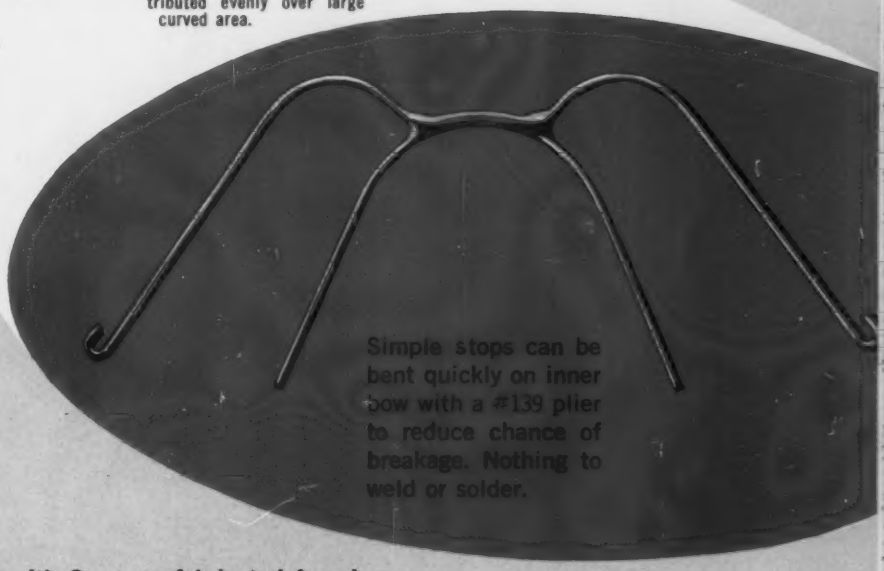
1. Minimum breakage
2. Comfort during wearing
3. Rapid fitting to the patient
4. Consistency of form and quality
5. Less cost than office fabrication

WIRE BENDING STRESS POINTS

Outer bow stands away from corners of mouth and is wide enough to stay away from cheeks when under tension.

STRESS POINTS RELIEVED WITH SOLDER

Stress points introduced in bending the wire are covered with solder. Stresses from flexing outer bow distributed evenly over large curved area.



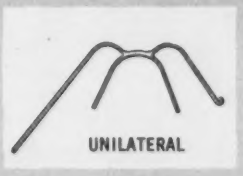
Simple stops can be bent quickly on inner bow with a #139 plier to reduce chance of breakage. Nothing to weld or solder.

STANDARD WIRE SIZES
Outer bow .062"
Inner bow .045"
Other inner bow sizes on request

SAVE 10 MINUTES CHAIR TIME with Oscar prefabricated face bows
Every bow symmetrically formed—ideally shaped—formed ends on outer bow.
Cut fitting time in half. Styles can be assorted for quantity prices.

STANDARD

ENDS STRAIGHT



UNILATERAL

HOOKS ON INNER BOW

$1.00 ea., lots of 50
$1.25 ea., lots of 12
$1.50 ea., less than 12
Hooks for elastics on inner bow, add .35 pe bow.

Oscar T. M. REG.

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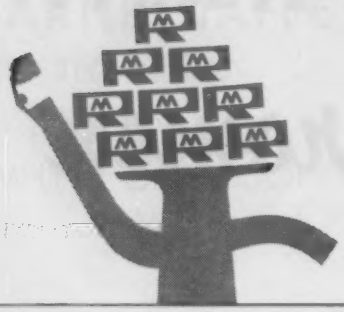
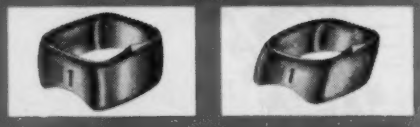


FUNDAMENTALS OF TIME AND MOTION ECONOMICS

Orthodontic bands are fundamental to a majority of precision techniques. Preformed Chrome Alloy Bands are an original R.M. Development that has helped many offices increase operating efficiency 50% to 80%. New refinements to our complete program of prefabrication provide even more effective means of improving and extending your orthodontic services.

New anatomy and contoured forms practically eliminate pliering and improve fitting qualities. Stretching and sizing is unnecessary with these new R.M. Bands, because they are furnished in 16 evenly graduated, full sizes and 16 half sizes. The width is the same as the original R.M. Prefabs, except where festooned.

CONTOURED MOLAR BANDS (Standard Width)



Narrow width bands are generally the same as the standard width, except occlusal gingival dimensions are considerably less. They have been designed for orthodontists specifying bands that require no trimming or pliering adjustments. Re-orders indicate that over 55% of R.M. Band users prefer narrow mandibular forms for fitting lower molars.

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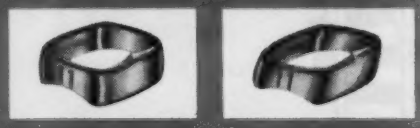

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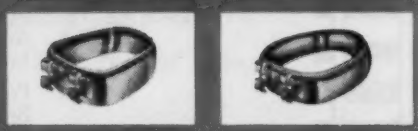

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RELEGATING APPLIANCE THERAPY TO ITS PROPER PLACE IN ORTHODONTIC SERVICE

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FIRST, let us minimize our importance by proper self-orientation. The age of the universe is estimated at 10 billion years. The appearance of life in a complex form certainly dates back millions of years. Man, as we now see him, has not changed greatly since his development to the point where he began keeping a record of himself and his events. Still, man has existed for hundreds of thousands of years.

Man has survived cataclysms, won battles against hordes of pestilences, and progressed by being able to adapt and further himself in response to the demands of a set of conditions. By changing with the demands, he not only has won against odds but has risen to even greater adaptability; he has thus gained dominance over his surroundings. He is the classic example of the adage that "function determines form."

Man's morphology has undergone many minor changes which we recognize. For instance, his head has become more erect; his brain case has become larger; the size of the lower face has decreased in relation to the rest of his head and body.

The latter category is the niche of this panoramic picture with which we are concerned. We do not claim to see the future clearly, but by mental interpolation we think that these morphologic changes may lead to an exceedingly small lower face and a correspondingly larger brain case.

The supposition of the future does not alter the immediate responsibilities that we have agreed to accept, namely, *the dento-facial problems of this present era.*

Presented at the annual meeting of the American Association of Orthodontists in Washington, D. C., April 24-28, 1960.

It is ironic that although man has survived and dominated the entire scene by his adaptability, we always wish to conform to the standard or average. This inner desire not to deviate from the considered norm is filling orthodontists' offices with patients far beyond the anticipation of the early founders of our field and far beyond our own expectations. The situation can so easily outgrow the point of personal efficiency as to represent an internal danger to our field of endeavor.

This brings us, nevertheless, to the second, more specific consideration, our duty to (1) keep this present-day man, an individual patient mentally satisfied that he is well within the limits of normalcy; (2) obtain functional dental adequacy; and (3) make the greatest possible strides toward esthetic harmony.

When we have accomplished these three things, an individual patient is then allowed mental unrestraint and physical efficiency to proceed with his part in the panoramic picture of continued supremacy in adaptability.

You know, it would be tragic to find that because of mental or physical anguish from a dentofacial problem, one wire was incorrectly attached in all our misguided missiles! This illustration is used since it involves the present most evident field in which man is meeting a challenge and adapting. We will succeed. The background orientation is sketched; our problem is clear.

The problem is being solved in thousands of orthodontists' offices each day. The struggle of "adapting" toward a better method for the solution has consumed hour upon hour, program upon program, year upon year. Each individual worker contributes his share to this, our small part in the whole panorama.

Orthodontics, in common with all other highly differentiated fields of specialized study, has undergone many changes in the evolution from its early beginning. These changes have come about as an expression of natural progress, the normal outgrowth of experience, and as a consequence of the broader extension of knowledge in related fields of endeavor. This progress has been the result of accumulated observations and labor on the part of many investigators. It is not the result of some particular isolated research.

It is important to point out that only for a relatively short time have results of orthodontic therapy been available for critical re-examination. Only recently have there been standards remotely accurate enough to permit determinations of treatment results to be really evaluated. Considered from this viewpoint, the status of our endeavors in orthodontics presents unlimited opportunity for profitable research and study.

Mechanical forces play an important role in influencing growth. In plants, a force is exerted far greater than that which might interfere or stop the same growth. The splitting of rock by tree growth and the lifting of sidewalks by root growth are familiar examples; yet, a smaller but slightly different pressure which may impair nutrition is all that is necessary to inhibit the plant's growth altogether.

Continuous excessive pressure, if applied to organs, extremities, etc., usually produces atrophy, or often even necrosis, by disturbance of cellular

nutrition. Physiologic pressure, applied intermittently, acts rather toward a natural stimulus and results in the direction of a growth response and callus.

Response to various kinds of mechanical stimuli is the probable explanation of what biologists term "adaptation of function" and changed conditions.

The functional equilibrium of tissues and the remarkable effects of its disturbances have long been recognized. It is impossible, however, to regard this equilibrium as a matter of wholly *mechanical* interactions. There is much evidence to suggest that physicochemical (metabolic factor) influences are also concerned in the mysterious impulse for growth and its cessation. They are ever present.

Why, for example, should growth apparently cease when an individual or an organ has attained average dimensions? Where is the dividing line between growth and repair? What is the nature of the controlling forces that permit regeneration of an entire functioning claw in the lobster and yet allows only a minor repair response among more highly differentiated animals?

Cellular activity resulting from mechanical stimulation applied in the direction of the desired tooth movement upsets tissue equilibrium, and a visible response is seen. Pressure applied to a given tooth is exerted through the tooth, inasmuch as the tooth itself is an unyielding body. This applied pressure is transmitted through the tooth and to the osseous tissues by way of the enveloping periodontal tissues. There, bone resorption may be accomplished through the action of the osteoclasts. The tooth is then allowed to move as the osseous tissue before it is removed.

Osteoblastic action with eventual bone deposition takes place behind the advancing tooth. This results if the right degree of pressure is applied, if the time factors are properly coordinated, and if the process is uniform with regard to physiologic tolerance and free from such accessory disturbances as inflammatory reactions. The desired position is thereby reached.

The degree of stimulus applied is of the utmost importance. If excessive, the stimulus is traumatic and produces an inflammatory reaction of varying degree. If inadequate, it is followed by no physically measurable results whatever. If applied in the proper degree, however, the stimulus produces tooth movement but does not cause damaging inflammatory processes or necrosis.

The purpose of our efforts is to establish as nearly normal occlusion as practicable. In most instances we may attain this in a growing person by the combined use of several procedures. These may be summarized as follows: (1) correction of influences which are undesirable (for example, habits); (2) correction of dental defects from which future interference might be logically foreseen (for example, restorations and space maintainers); (3) maintenance of good nutrition and general health; and (4) use of mechanical appliances during varying periods of time to provide the necessary requirements for a stimulative response.

It is apparent that the natural tendency of the vast majority of persons is to develop entirely satisfactory occlusal relationships in the normal course of their development and growth. This often occurs in spite of what at first appear to be insurmountable difficulties. It probably has been the experience of

orthodontists universally to observe with astonishment the autocorrection of orthodontic defects in patients seen after an interval of some years. Those in whom no treatment has been rendered, other than possibly some incidental dental correction, attain remarkable self-correction. There arise then, some more important practical questions regarding the field of orthodontics. They are summarized as follows: (1) What cases should be observed only? (2) Is myofunctional therapy sufficient in this case? (3) In what cases should mechanical treatment be instituted? (4) What type of appliance should be employed? (5) Should treatment be continuous or in stages? (6) When should treatment be discontinued? (7) Is a retentive appliance necessary? (8) What type of "working retainer" is best? (9) How long is retention needed? (10) Can future relapse be avoided by any minor present steps (for example, early third molar removal or occlusal equilibration)?

It is obvious that the answers to the foregoing questions constitute virtually the entire field of orthodontics, and they are not answerable by concise statement. We are obliged to remind ourselves that each case, while it may conform to a certain type, possesses a definite individuality which demands that it be treated from the standpoint of its own peculiar characteristics. We must constantly bear in mind the degree of restitution that we may reasonably expect to obtain. We must remember that we cannot hope to accomplish this readjustment of aberration within shorter spaces of time than tissue normally requires for physiologic changes. Finally, we should be ever mindful of the fact that causes outside the mouth and jaws often have an important bearing, as in the case of the asthmatic patient. We should not hesitate to seek the assistance and counsel of medical colleagues when the answers to obscure extraoral questions are not apparent.

We have no justification for regarding the appliance itself as the principal feature of orthodontic case management. There is no logical reason to expect the mechanical appliance alone to accomplish miraculous results. Appliances should be regarded in the light of stimulation applied to supporting tissues, and never as a means of force. They should counteract influences which are perverting and inhibiting to processes of natural development and growth. One must constantly remember that the dental arch, as part of the individual, grows with the individual and that the stimuli of the appliance toward a growth process must be reconciled with the entire individual. The appliance is only a variable controlling factor.

It has been my good fortune to practice orthodontics since 1916. Prior to that time, I spent seven years in general practice. Thus, I have had an opportunity to observe many changes that have taken place in orthodontics over a period of years. The pendulum swings from one end to the other and back to the middle. It never stops. It does spurt and slow, but it varies very little. Its position is much more obvious and commands more attention when it is at either end.

It has also been my good fortune to be a proponent of early correction, that is, treatment during the mixed dentition. In many cases, if treatment is not undertaken at an early age, deterioration will continue until there is a very

serious deformity in the permanent dentition, sometimes needlessly requiring extraction of teeth. In certain instances, of course, it is advisable to wait until many of the permanent teeth have erupted. Possibly, delaying as late as the age of 14 years before starting treatment may be recommended in specific cases. Generally, however, that is just the time that I do not wish to treat them. Treatment of patients at the ages of 14 and 16 years may be the reason for so many first premolar extractions. Some orthodontists say that they extract as many as 90 per cent, but the pendulum position indicates that this is not true today. It has been but a few years since it was true, however. It would be interesting to know what action one would take upon his own little daughter regarding extraction of first premolars at an early age. It would be more interesting to know whether he would allow his child to become 14 years old before he instituted treatment. Why not see the patient early, make a proper treatment plan, do what there is to do, then get out and let Nature continue, even if additional treatment is needed at another stage? This seems far more desirable than waiting until the mouth has reached its low in efficiency and response to stimulation, the extraction of at least four first premolars then being the solution.

Therapy involving extractions is still on a high wave of popularity. The final outcome will not be properly evaluated for twenty-five to thirty years. It may determine whether or not you will practice on the second and third generations, which it has been my good fortune to do (but not by the routine of tooth extractions). There is little evidence that other healing arts wait until the case is as bad as it can get before instituting treatment. The current reckless use of extraction therapy makes some of us wonder what is on the horizon. Are we already at the threshold of an agonizing reappraisal?

There is no question that extractions are sometimes a necessary part of treatment. Genetic tooth-to-tooth and bone-to-tooth disharmony, metabolic disturbances resulting in loss of growth during an active period, esthetic prudence—all contribute to the necessity of extraction therapy. The agonizing reappraisal will not be concerned with whether extraction is right or wrong as a corrective measure. The question will be whether it is right or wrong in the individual case.

Modern labiolingual treatment principles have been built on actual use and experience over a period of years. Since nearly every mechanical orthodontic appliance is actually in itself a labial or a lingual appliance, the term *labiolingual* should not be restricted to any particular appliance. The labiolingual technique as described in this article, however, includes the use of the removable lingual arch in conjunction with the round or twin labial arch wire appliances.

The basic principles of the labiolingual technique have been stated many many times and have never changed appreciably. The fundamental appliances include a labial arch and a lingual arch used in conjunction to supplement and complement one another.

The lingual appliance is used primarily for movement, control, resistance, and reinforcement or stability of the posterior teeth. The labial arch is used in a similar manner for control and movement of the anterior or incisor teeth. Thus, we have two appliances functioning at the same time but always as a supplement or complement one to the other. These appliances are designed and

constructed specifically for each individual case. With these more than with some other appliances success or failure rests on the individual operator. There is little room for error.

The labial and lingual appliances, as illustrated in this article, are disarmingly simple in appearance. Their constructions and adaptations, however, are likely the most difficult to master of all the leading appliance techniques. This is not to say that unless one is an exceptional technician he will be unable to use these appliances. It does, however, take excellent basic training and instruction plus diligent persistence to construct these appliances successfully for their best use. Faithful endeavor pays a great reward since, once mastered, these appliances are possibly the easiest of all the major appliances to use efficiently in a practice. Excellent orthodontic service may be rendered to a great many more patients when this type of mechanism is used. Efficiency, cleanliness, esthetics, ease of manipulation, and shortened chair time with resulting lowered costs are only a few of the advantages of the labiolingual appliance.

It is most important that we answer the challenge presented by the great numbers of patients who are requiring orthodontic correction. We must, therefore, direct our attention toward efficiency and simplicity. This calls for engineering prudence, consideration, individual rather than group planning, and wisdom in handling the volume demand.

Of primary importance in the labiolingual technique, as in all techniques, is the consideration of anchorage. Without anchorage control, orthodontic treatment is bound to fail and to produce at least very undesirable side effects. Correctly constructed and used, the labiolingual appliance may constitute as effective a resistance or anchorage unit as any appliance. Many of the teeth are used for anchorage purposes, rather than just the first molars as many have mistakenly supposed. The resistance or anchorage stability in the mandibular arch has proved excellent, since extraoral anchorage is not a routine part of the treatment procedure used in our specialty. It has been my experience that an undisturbed periodontium is a more secure and stable resistance unit, affording better anchorage, than one which has been disturbed. Consequently, major tooth movements for the preparation of anchorage resistance units are unnecessary and are not recommended.

The labiolingual treatment technique is supplemented by a number of auxiliaries and their application. These are constantly undergoing improvement and refinement. New auxiliary ideas are constantly being tested; still better ones are expected in future years.

Laymen mistakenly view our branch of the healing arts as existing solely for esthetic purposes. This view is nourished by many prominent men in our own field. An excellent occlusion must not be relegated to a minor or almost insignificant role. Ideal inclinations and alignments are indeed desirable, but not to the disregard of a functionally efficient occlusion. Yielding to the trend to "give the public what they want" without first giving some time to educating the patient is a dereliction of duty. It is a violation of our responsibility as professional men.

The esthetic emphasis is complicated by our having entirely different interpretations among ourselves as to what constitutes the best in esthetic results. Different artists do not agree on the interpretation of paintings. Each of us may have the same starting point and the same aids with which to arrive at our goals, but those goals may vary according to our own ideas, personal experiences, and interpretations. We already have enough aids and information regarding their use to produce good results. It has been my observation, however, that orthodontists are not now accomplishing the best results that can be achieved.

Basic research, upon its completion and analysis, will enable us to apply our technical skills better and with more confidence and help us obtain better results. We must remember that the products of research can be evaluated only after they have had successful use in treatment and the results have stood the test of time. It is desirable that men in the basic sciences, associated with schools, work our hypotheses toward establishing norms. We must never forget, however, that many of these findings are statistics or averages and of only relative value. It is very easy for a research experiment to provide laboratory results which apparently hold the answers to many problems. On application, the procedure may prove to be impractical.

So much emphasis is being placed on the discovery of more basic orientation points in trying to establish a one-two-three system of diagnosis and treatment planning that the individual diagnostician's interpretation of obvious facts in arriving at a treatment plan has been relegated to a very inferior role. The result is seen in the unsuccessful treatment of many patients.

A particular case will illustrate the foregoing thoughts. Patient S. B. (Figs. 1 and 2), a 14-year-old girl, was examined and intraoral and cephalometric roentgenograms were made. These were interpreted, and in a consultation with the girl's parents the treatment plan was outlined. This treatment plan involved immediate removal of the four first premolars. Perhaps many of you would treat this case in the same manner. Would the cephalometric tracings *dictate* such a treatment plan? I rather think not. I would rather feel that this treatment plan represents a misinterpretation of findings and a "leapfrog" attitude that a few months in practice will temper.

Since orthodontics first became recognized as a specialized branch of dentistry, thinking men have realized that in orthodontic treatment we are individuals dealing with individuals. It is difficult, certainly, for the student, the orthodontist beginning practice, or the instructor practicing only a small part of the time to avoid following some prescribed diagnostic formula. Such a formula, however, can only lead eventually to mediocrity. Only the extreme egotist could strive for this sameness, even though such a trend seems to be strongly followed in orthodontics. Those who follow this trend are blindly looking for the easy pattern to follow and are not relying on the knowledge and good sense which are necessary parts of a diagnostic procedure. Sheehan[36] has written: "In my mind the orthodontist himself is and should be the best of all diagnostic and treatment instruments. The finest machine to assist me in

making a good diagnosis is the one that God gave me. It is located between my ears. It has taught me to be cautious, to be careful, and to observe well before administering any orthodontic therapy."

Research men like Krogman and Sassouni are to be commended. They present important diagnostic methods, facts, and statistics, but their plea for diagnosis of the individual involved is never de-emphasized. A complete and detailed summary, with statistical backing, is excellent for the student and the research scientist, but such an approach is too time-consuming to be practical in the office of a busy orthodontist.

A. Fig. 1. *B.*

A. Fig. 2. *B.*

Fig. 1.—Patient S. B. *A*, Full-face photograph. *B*, Profile view showing bimaxillary protrusive tendency.

Fig. 2.—Patient S. B. *A*, Right side with adequate space for eruption of second premolars. Note spacing between lateral incisor and canine as well as between canine and first premolar. *B*, Left second premolars erupted with excess room. Spacing is present in all other areas distal to lateral incisor.

I shall not attempt to list here the many particular items suggested and recommended for diagnosis and case analysis. These have been enumerated in many articles during the last three years. They are available to every orthodontist. Since this article deals with a practical approach to correct diagnosis and proper treatment planning, I shall attempt to present only those items used in everyday practice.

DIAGNOSIS

In my office many diagnostic aids, which are listed and discussed in papers dealing with diagnosis only, are fully utilized in the making of a diagnosis.

Space limitations do not permit their inclusion here; this should not be misconstrued as an indication that this information is not used or even that it is lightly regarded.

Any diagnosis begins with the individual patient. A great deal of time may be consumed in preparing graphs, making measurements, etc. of cephalometric tracings which often could probably be better used in making a more thorough visual examination and a better interpretation of the obvious in the patient himself.

The value of a long, detailed history, including such diverse information as childhood diseases, whether or not the youngster was bottle fed, etc., in the making of a correct treatment plan in the practicing orthodontist's office is certainly questionable. I do not mean to discourage the accumulation of such material by the orthodontist who intends to index and assimilate statistics on these data. It has been my observation that too often so much time is devoted to such items that a correct diagnosis is never actually made on the patient.

The patient is seated in the chair by the receptionist or dental assistant. The orthodontist meets the patient and not the parents first. Many times this one bit of psychological good judgment makes the difference between a successful or unsuccessful case. The difference between success and failure in many diagnoses lies in getting to understand or know the patient. In really understanding his patient, the orthodontist may get a better knowledge of the limitations, the expectations, the amount of cooperation, etc. that may be expected from this patient. Winning the confidence of the patient is as much a part of diagnosis for treatment planning success as the actual appliance design. The correct interpretation of some intangible happening might greatly assist their progress of the case at some distinct distant point. Certainly, it is desirable to have one or both parents present. Even other close relatives who may be in the office should be met in an effort to get a better over-all insight into inheritance possibilities.

In order to cover as much as possible concerning diagnosis and treatment with the labiolingual appliance, I shall attempt to follow as closely as possible any actual measures which are deemed necessary for successful diagnosis in our office. Generally, we consider that our diagnosis is based on four broad diagnostic aids: extraoral, intraoral, general diagnostic, and facsimile or duplication aids.

Extraoral aids include the following:

1. *General physical structure of the patient.* Is the patient large- or small-boned? heavily muscled? fat? thin?

2. *Head proportions (not actual measurements).* Is the cranium broad, narrow, or tapering? Is the face large or small in proportion to the head?

3. *Profile.* Are nasal structures extremely prominent? Are cheek bones high? Or is there a receding or protrusive maxillary or mandibular appearance?

4. *Lips and muscle tone.* Is the upper lip short? Are muscles in good tone? What is the size and tone of the orbicularis oris?

5. *Vertical dimension from nose to chin.* Is close-bite or open-bite noticeable?

6. *Habits.* Are tongue-thrusting, lip-biting, sucking, or other habits in evidence?

7. *Facial balance.* Is there protrusion of upper lip or lower lip? What is its relationship to the upper face? Is bizygomatic width in proportion to mandibular width, etc.?

8. *General external appearance of face and patient.* Does the patient now present a handsome or an ugly face and appearance?

Intraoral aids include the following:

1. *General appearance of teeth in the mouth, rather than appearance of teeth in the face.* On opening the mouth, does the patient give a toothy appearance? Does there seem to be vertical dimension adequate for that particular patient? Do the teeth appear to be too large for the supporting structure?

2. *Width of arches and arch length.* Are the arches of narrow form and restricted in certain areas? Is the arch length sufficient for the teeth? Are some of the individual teeth blocked out from the arch? Are cuspid, premolar or molar widths adequate?

3. *Relative arch form.* Are the arches harmonious in size and shape one to the other? Is good apposition present, possible, or impossible?

4. *Alveolar profile.* Is the bony profile protrusive or retrusive? Is enough supporting bone apparent? How does this conform with extraoral profile?

5. *Tongue (size and habits).* What peculiar or interfering tongue habits, such as swallowing, tongue-biting, thumb-sucking, are present?

6. *Vertical dimension.* Does the patient have an open-bite, close-bite, or end-to-end bite? How does this compare with the appearance on extraoral examination?

7. *Tooth size.* Do the teeth appear to be of a size that is harmonious with the size of the face and facial structures?

8. *Inclination of cuspids.* In the making of a diagnosis, this most important consideration is frequently overlooked or considerably neglected. When one is determining the advisability of extraction, when it is questionable whether the first premolars are the teeth of choice, this decision is greatly strengthened if the cuspid teeth are mesially or labially inclined. Should the cuspids already be tipped somewhat distally, certainly the first premolar is not the tooth of choice.

In younger patients, particularly in the deciduous dentition, the inclination of the cuspid lingually is in many cases the direct cause of a malocclusion which manifests itself in the permanent dentition. Often cross-bites are actually due to occlusal interference of the cuspids. These teeth, for some reason, do not appear to move buccally in many cases without some orthodontic interference and assistance. Many

cases of lower crowding incisors may be prevented by expansion of the deciduous cuspid region before eruption of the mandibular permanent central and lateral incisors.

9. *Inclination of second molars.* Often eruption of the second molars, particularly the maxillary second molars, in a distal direction will indicate a strong supporting reason to extract the second molars and allow other teeth to move distally into this space. In such instances, the second molars usually are not in functioning occlusion and the third molars can be easily allowed to erupt into a normal occlusion rather than remain impacted so that major oral surgery will be required for their removal.

10. *Presence or absence of third molars.* This was discussed in the preceding paragraph. Quite often the presence or absence of third molars will influence the decision as to whether or not extraction is advisable in the borderline cases. Again, I repeat that these last three diagnostic aids particularly are overlooked and underestimated in most discussions of diagnosis.

General diagnostic aids include the following:

1. *Age and relative development of the patient.* The relative development of the patient is a very important factor to note in determining the optimum time at which to begin treatment.

2. *Anticipated cooperation from the patient.* This is an intangible feeling or understanding which may be gained by spending a little time in consultation with the patient.

3. *Oral hygiene and incidence of caries.* It is important to note this in treatment planning.

4. *Attitude of patient and parents toward dentistry and orthodontics.*

5. *Anticipated availability of patient.* Will the patient be available for the time anticipated for treatment? Is the patient likely to complete the orthodontic treatment, once it is begun? This type of information can usually be gained during conversation with the patient without any direct questioning.

6. *Hereditary pattern (similarities and dissimilarities between patient and relatives).* Complete dissimilarity certainly should be investigated, since there is a possibility that the child may have been adopted.

7. *Attitude of patients and parents regarding expected results.* Orthodontists are only human. In order to avoid future misunderstanding, parents should be informed of limitations. The orthodontist should be honest in explaining anticipated results and maintenance of results.

8. *Attitude of patient and parents regarding extraction.* In many borderline cases there are alternates. It is amazing to see how adamant

some of these patients and their parents are with respect to deliberate extraction of any tooth. This certainly should lead the diagnostician to make a much more careful explanation, if extraction is involved in the treatment procedure of choice. It would also be possible then to give the patient an option after the shortcomings in either method of treatment have been explained.

9. *Attitude of patient and parents regarding time of treatment.* Many factors, of course, are involved in this particular diagnostic aid; however, there are cases to be treated in which the patient will be available for only eight to twelve months. We may be forced to compromise our treatment, but there is no reason for not giving our service with a clear understanding concerning the reason for compromise.

10. *Attitude of patient and parents regarding appliances.* Certainly, no one who has practiced orthodontics is foolish enough not to realize that some patients are very resentful about certain types of appliances and the disfiguring appearances which they give. While we do not baby our patients in any way, an orthodontist should never get into such a rut that he does not realize he is treating an entire patient and not just the patient's teeth. A compromise in appliances may be made with a careful explanation to the patient that possibly less ideal results may be gained or that perhaps longer treatment will be necessary due to the use of appliances of less objectionable appearance.

Other aids include (1) a full-mouth radiographic survey; (2) occlusal, lateral, or cephalometric radiographs as needed; (3) dental casts artistically carved to a centric relation; and (4) photographs.

TREATMENT METHODS

When the diagnosis has been made, a consultation is held in which the child's parents are advised of the entire case analysis—etiology, present status, treatment plan, prognosis and cost of treatment.

A thoroughly completed case analysis is far from sufficient. The patient still must receive and properly respond to a correctly planned treatment program.

Until there is complete understanding, with accurate and sensible control of genetics, perfect nutrition, good physical and mental health, and the absence of trauma, there will be a need for orthodontic treatment. Mechanical appliances will be necessary to carry out the desired corrective measures. The basic mechanical principles involved remain the same. The methodology varies with the "seasons."

It is my desire here to demonstrate some methods which, I feel, adhere very closely to the basic mechanical principles required. They are also easily adaptable to and in keeping with the individual variation requirements of each patient.

Early correction of skeletal deviation and occlusal disharmony has already been recommended.

There is one phase of labiolingual mechanical correction that I feel should be presented at this time, namely, the occlusal guide plane.

The occlusal guide plane is an auxiliary attachment to the maxillary lingual appliance. Its use is recommended particularly for the mixed dentition age level, but a very favorable response may be expected, in ideal cases, even to the age of 30. (Its effective use at the various ages will be shown in the case reports that follow this discussion.)

The occlusal guide plane is a mechanical appliance with a definite inclined plane which, when in use, produces a change in the occlusal relation of the maxillary and mandibular teeth. It assists in movement to a more normal position. Its use is indicated in the Class II close-bite cases, which include Class II, Division 1; Class II, Division 1, subdivision; Class II, Division 2; and Class II, Division 2, subdivision. It may also be used satisfactorily in (1) Class I cases with a need for an increase in vertical and maxillary mesial displacement or a tendency toward a Class II relationship and (2) certain cross-bite cases in which relieving cuspal interlocking would facilitate tooth movement. Its use is contraindicated in the Class III case, the open-bite case, and the Class I case with a normal vertical dimension.

Properly constructed, the guide plane is not a bite plate, and it does not function as a bite plate. It is constructed in an exact manner as dictated by the demands of the individual patient. The pitch and the height must be correct and appropriate for each individual case.

When the height of the guide is excessive, it may cause the lingual arch to become a major irritant to the maxillary palatal tissue. If the guide is too short, it may give no guiding effect and no vertical increase at all. Too great an angulation or "pitch" may allow the patient to bite posterior to the guide, in which case response will be retarded rather than helped. Too little pitch will not guide the lower teeth and jaw sufficiently forward to correct the molar relationship. When use of the occlusal guide plane is indicated, its accurate design and construction are an absolute necessity.

Functionally and anatomically, the guide plane temporarily places the mandible in a forward position. The mandibular condyle is displaced downward and forward in relation to the articular eminence of the glenoid fossa. This condyle-fossa relationship is only temporary, and in a short time these structures again assume their normal anatomic relationship.

The type of case also dictates the type and degree of anchorage used. Properly designing, constructing, and placing the labiolingual appliances in which the guide plane is acting as an auxiliary attachment will determine successful anchorage. When the anchorage is successfully planned and the patient is cooperative, the following responses may be gained qualitatively as desired:

1. The anchorage can "unlock" the occlusion by reducing cuspal interlocking so that the dental units may move more easily.

2. It can assist in moving the maxillary buccal segments distally, with the mandible remaining in nearly its same position.

3. It can assist in moving the maxillary buccal segments distally while stimulating the mandible toward a forward growth response.

4. It can retard the forward growth of the maxilla while encouraging the forward growth increment, that is taking place in the lower face.

5. It can assist in maintaining the maxillary arch in its present position while gaining as much mandibular forward growth and anterior accommodation as may be expected in individual response.

Some of the important factors in anchorage planning and appliance construction will be pointed out in the individual case reports that follow. The very great importance of this aspect of orthodontic treatment was well indicated recently when the Northeastern Society of Orthodontists devoted an entire program to anchorage. Without sufficient and controlled anchorage, good orthodontic results are accidental.

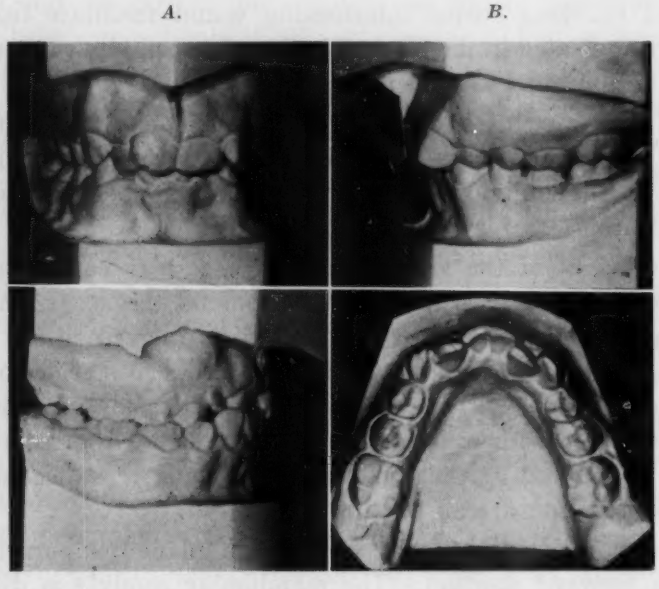


Fig. 3.—Case 1 (from the collection of Dr. Boyd Tarpley). *A*, Class II, Division 2 malocclusion with deep-bite and irregularity of maxillary and mandibular anterior units. *B*, Left side of model demonstrating relationship of molars, premolars, and canines; mandibular molars have drifted forward. *C*, Right side is slightly more distal. Depth of bite is obvious. *D*, Occlusal view of mandibular model indicates forward drift of segments and crowding of mandibular anterior teeth.

It is with a salute to the research and teachings of Ketcham, Hellman, Oppenheim, Todd, and others that I present the following cases. It is with a salute to the reader that I lift my ear to the pleasant "new" rumors that (1) early treatment should be done as indicated, (2) gentle, stimulating pressures are advocated, and (3) simple, efficient corrective appliances working with nature now accomplish more than force will later.

These are the principles behind the use of the labiolingual technique in treating the individual patient. The proper use of this technique is up to the

individual orthodontist, but I hope that he will use it with the thoughts presented early in this article foremost in his mind. The rewards are gratifying.

With humility in personal attempt but pride in the method of mechanical principle, I present these cases as evidence of the assistance given biologic and physiologic response to growth by this mechanically stimulative approach.

CASE 1.—The patient was a 10-year-old white girl with a Class II, Division 2 malocclusion of unknown etiology. The molar relationship was not severe, but the case was complicated by a deep-bite and by irregularity of the anterior teeth of both arches (Fig. 3). The patient's mother and father both had excellent occlusions. Roentgenograms indicated that the deciduous molars should be removed.

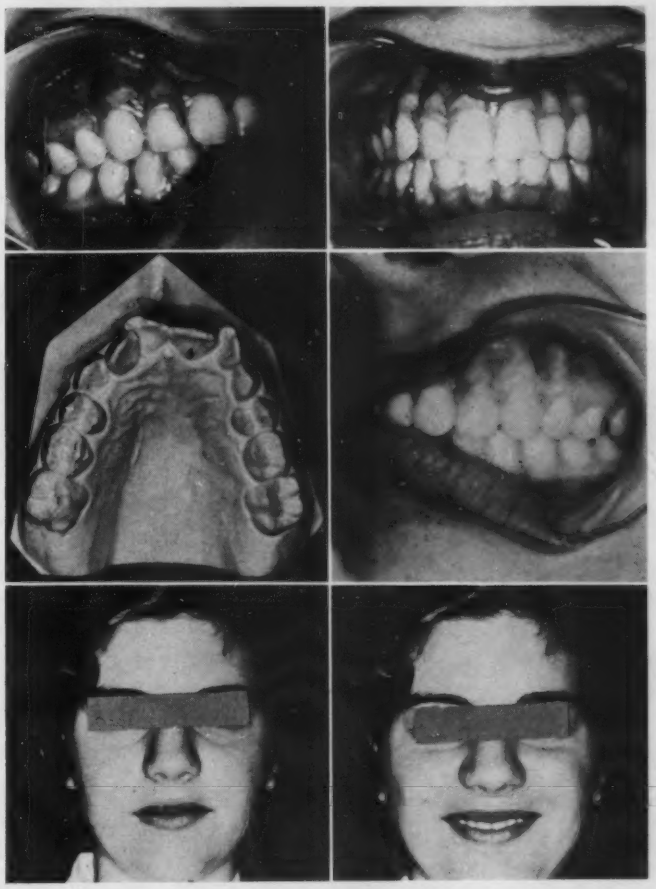


Fig. 4.—Case 1. *A*, Left side view. Teeth have interdigitated properly. *B*, Anterior view at completion of nineteen months of active treatment. Note amount of opening present at this time. *C*, In occlusal view maxillary model appears narrow in anterior regions. Pencil marks at lingual aspect of left central and right lateral incisors indicate rests from base of guide plane used to depress these teeth and nudge them forward, at the same time tipping the maxillary molars down mesially, thus opening the bite. *D*, Right side shows same favorable position of teeth as left side view in *A*. *E*, Anterior view of patient indicates adequate bony support for all teeth. *F*, The patient's smile is pleasant but not toothy, and the face is well developed.

Nutrition was excellent. The patient had experienced the normal childhood diseases. Her posture was somewhat poor, but her mental attitude and cooperation were very good.

Since the bite was closed and the molar relation tended toward Class II, a labiolingual appliance and an occlusal guide plane were used. The appliances consisted of four molar

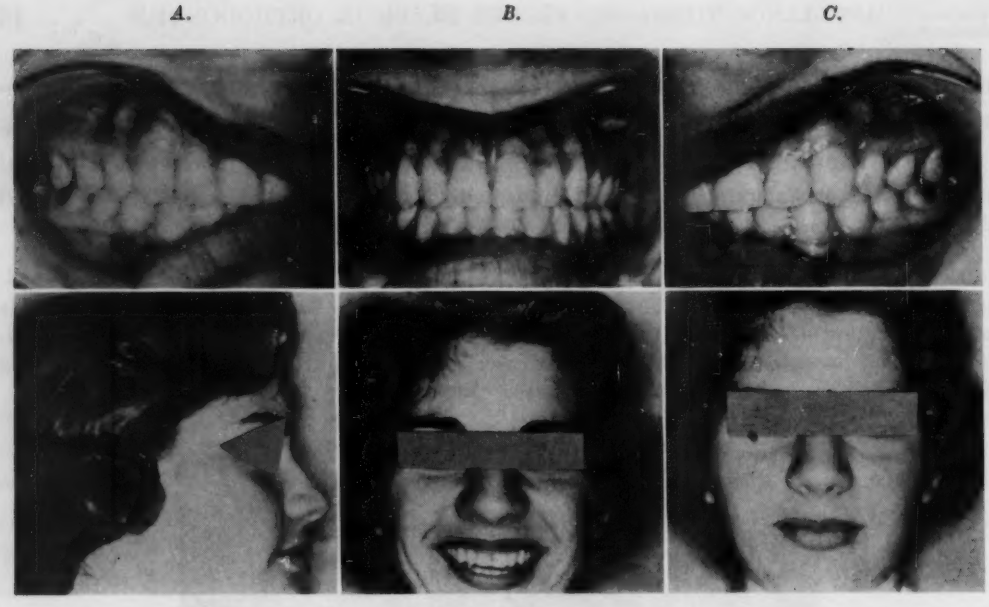


Fig. 5.—Case 1. *A*, Left side; teeth have remained in favorable position. *B*, Three years out of active treatment. A mandibular Crozat appliance is worn at night only. *C*, Right side; position of teeth has remained favorable. *D*, Profile view. An occlusal guide plane is nearly always indicated in a Class II, Division 2 case, and it certainly reduces treatment time! *E*, A pleasing smile. *F*, Front view of face. Note how features have matured.

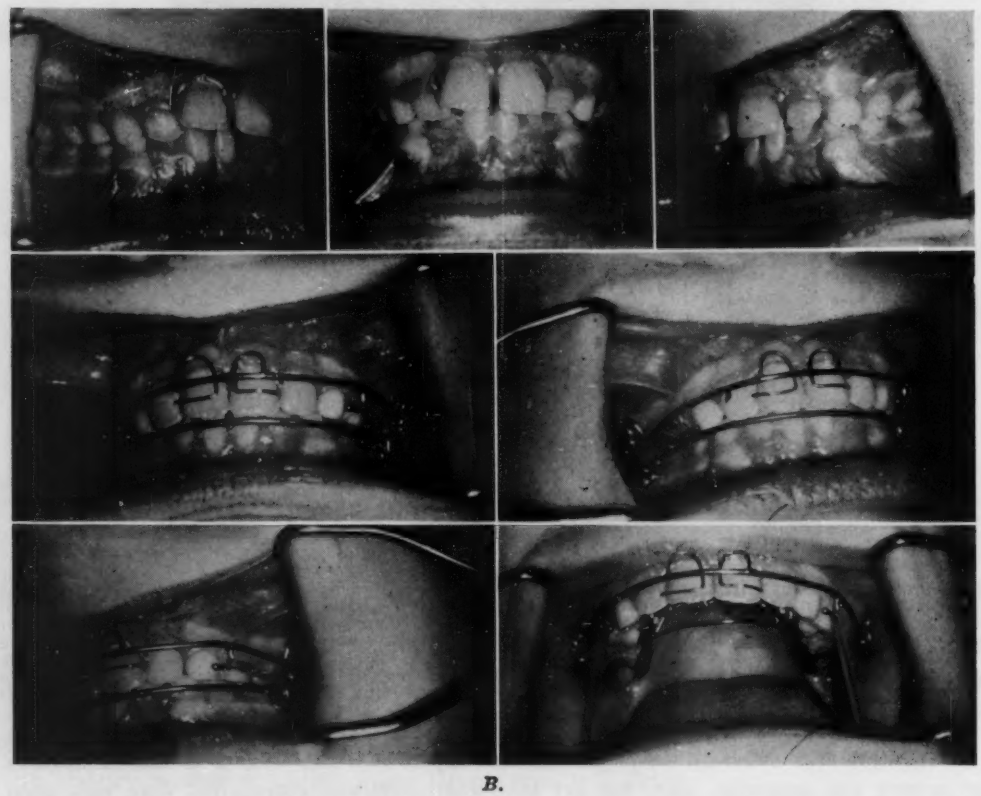


Fig. 6.—Case 2 (from the collection of Dr. Phil Adams). *A*, Typical Class II, Division 1 mixed dentition case. *B*, Appliances at completion of approximately eight months of active treatment.

(*Continued on opposite page.*)

bands, a lingual and a labial arch, a lingual with an occlusal guide plane attached, and a labial in the maxillary arch. All appliances were placed at one sitting, and intermaxillary rubber bands were used to supplement forward movement of the mandible.

The case progressed well, and the patient was in the office twenty-eight times during the period of active treatment. The appliances were removed for cleaning five times, since only molar bands were used. Secondary treatment consisted of the wearing of a mandibular Crozat appliance at night. The results of treatment are shown in Figs. 4 and 5. This patient must have been treated in a period of growth, since the case progressed so well.

After completion of treatment the third molars were removed because they were impacted.

Fig. 6 (Cont'd).—*C*, Appliances removed after completion of active treatment.

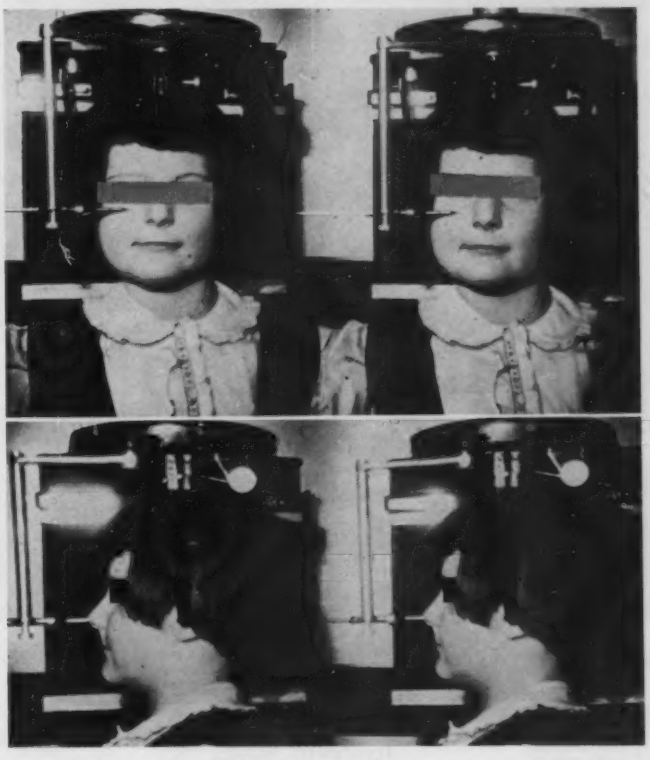


Fig. 7.—Case 2. Facial contours at end of primary treatment.

CASE 2.—The patient, a white girl aged 8 years 5 months, presented a typical Class II, Division 1 mixed dentition malocclusion (Fig. 6, *A*). The etiology was uncertain, but the malocclusion may have been of genetic origin or related to failure of synchronous growth in the mandible. The patient's mother had an untreated Class II, Division 1 malocclusion.

The history indicated that the patient had been bottle-fed, that she had experienced the usual childhood diseases, and that she had no pernicious habits. The patient's physical build was slightly heavy but within 10 per cent of normal.

Prognosis was favorable. There was a good facial pattern, and it was believed that if normal lip relations could be restored a good result could be expected.

Fig. 8.—Case 2. Relations approximately four years after completion of primary treatment.

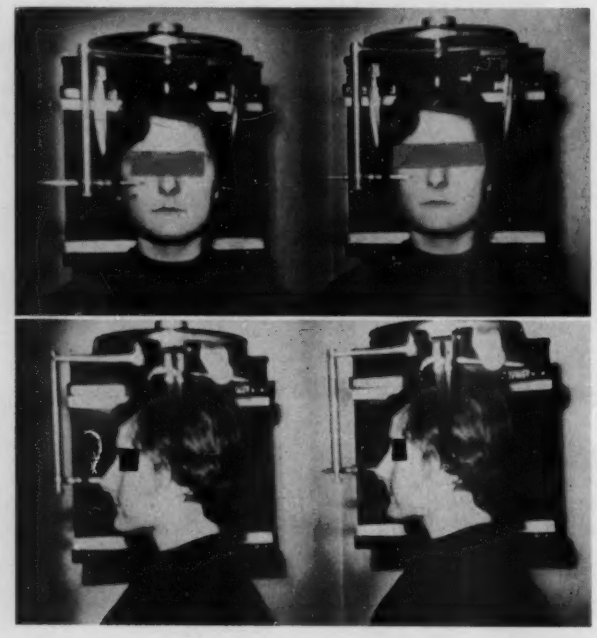


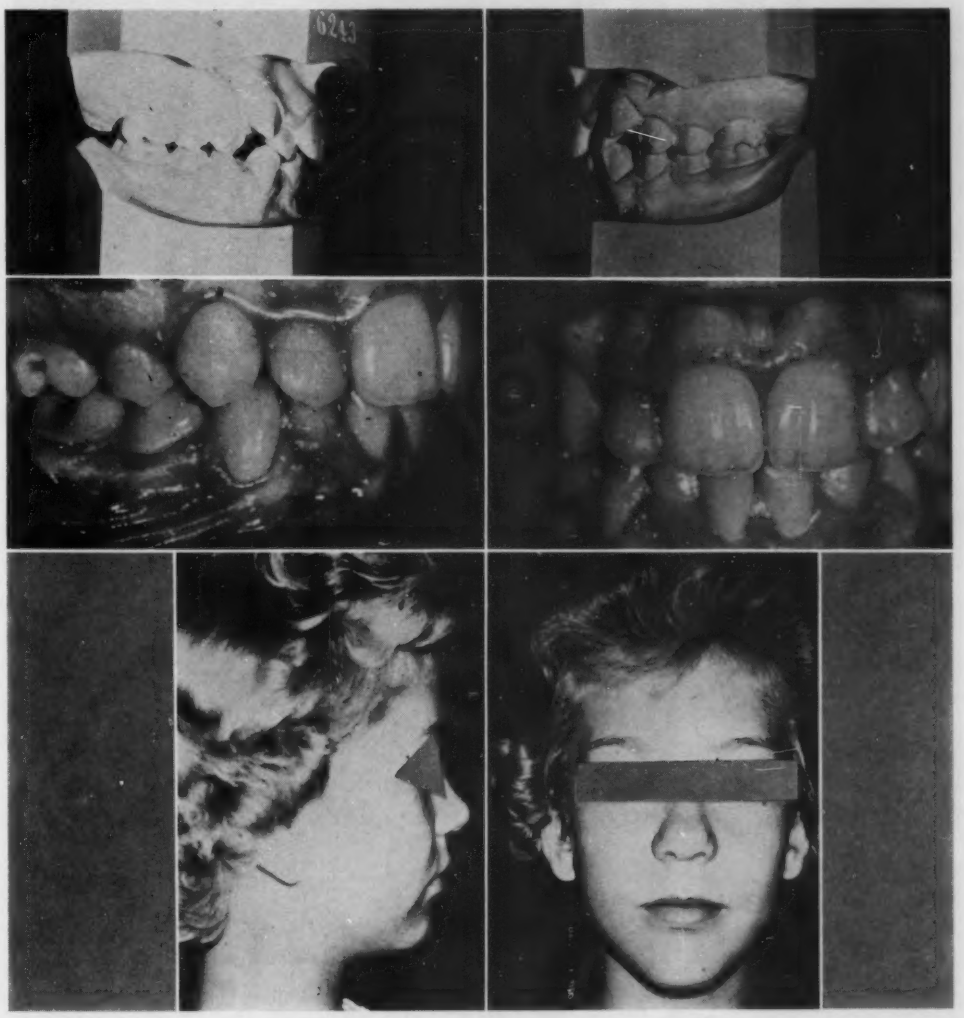
Fig. 9.—Case 2. Facial contours approximately four years after completion of primary treatment.

The treatment plan called for teeth and arches to be placed in typical relation, supported with a retainer, and observed. Appliances consisted of an occlusal guide plane and labiolingual Class II mechanics (Fig. 6, *B*).

Fig. 7 shows the facial contours at the end of the primary treatment period. An acrylic bite plane was worn for about one year and discarded during eruption of the premolars.

Figs. 8 and 9 show the results approximately four years after completion of primary treatment.

CASE 3.—The patient, a 10½-year-old girl, presented the malocclusion shown in Fig. 10, *A*. After careful diagnosis, it was determined that the most favorable treatment would involve extraction of four premolars. Fig. 10, *B* shows intraoral photographs taken sixteen months later. Those who are inclined to criticize the results are reminded that no



A.

B.

C.

Fig. 10.—Case 3. *A*, Right and left sides of models. *B*, Intraoral photographs taken sixteen months after extraction of four premolars. *C*, Photographs of patient sixteen months after premolars were extracted.

orthodontic treatment whatsoever was involved in this case. Growth and development were favorable; consequently, orthodontic appliances were not necessary. Fig. 10, *C* shows the full face and good vertical dimension that were evident sixteen months after extraction of the premolars.

CASE 4.—This case involved identical twin sisters, Jane and Jean. Both girls had good mandibular arch lengths, and the incisors were in favorable axial inclination (Fig. 11, *A* and *B*). Diagnostic study indicated treatment to move maxillary units distally on

the right side in order to restore proper functional occlusion and to keep good facial balance. A maxillary second molar was extracted in the course of each girl's treatment.

During part of the first seven months of treatment, anteroposterior elastics were used during the day and up-and-down elastics were used at night (Fig. 11, *C*). Compression of coil springs was increased as the molars moved distally.

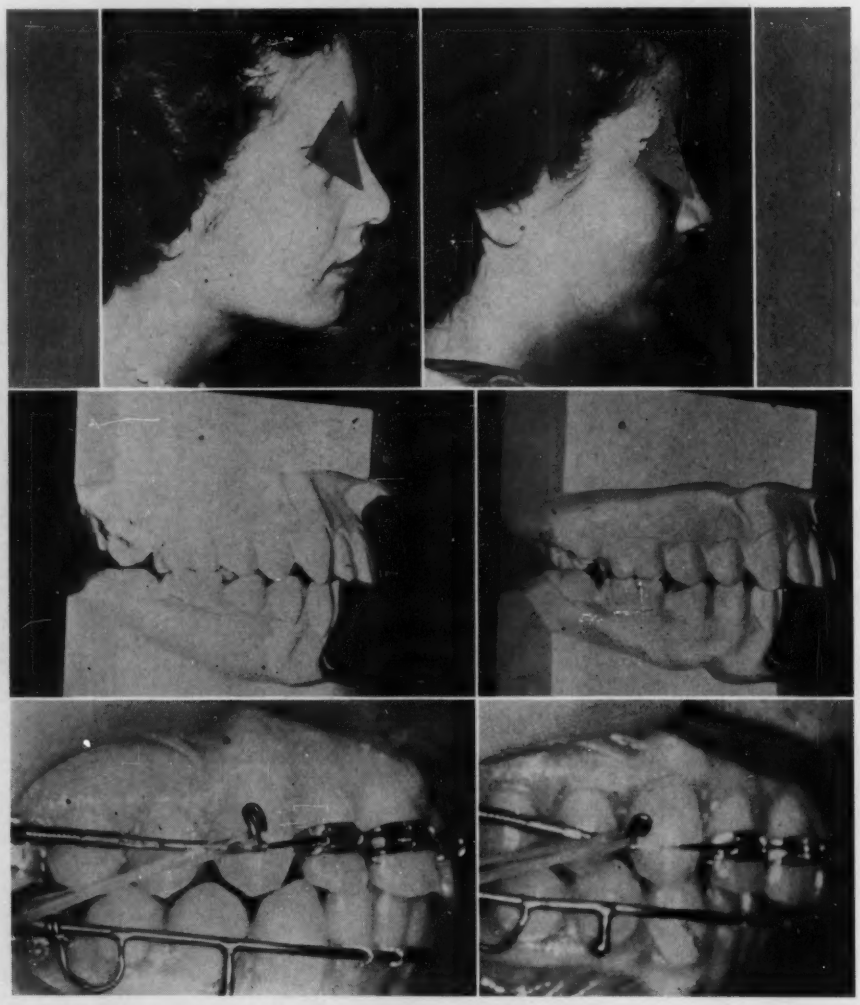


Fig. 11.—Case 4. Identical twin sisters—Jane on the left and Jean on the right. *A*, Pretreatment photographs. *B*, Pretreatment models. *C*, Appliances used in the two cases.

Although the patients had similar malocclusions, Jane showed a rather strong tendency toward open-bite in the anterior section (Fig. 12, *A*).

Jane's treatment involved extraction of maxillary second molars with distal movement of maxillary teeth. Jean already had a much more favorable functional occlusion; therefore, the left first premolar was extracted and the Class II relation was left on this side, since the functional occlusion was very favorable.

Fig. 12, *C* to *E* shows the appliances used in treating these malocclusions. Since one patient ran away and got married, only the results achieved in her sister can be shown here (Fig. 12, *F* and *G*).

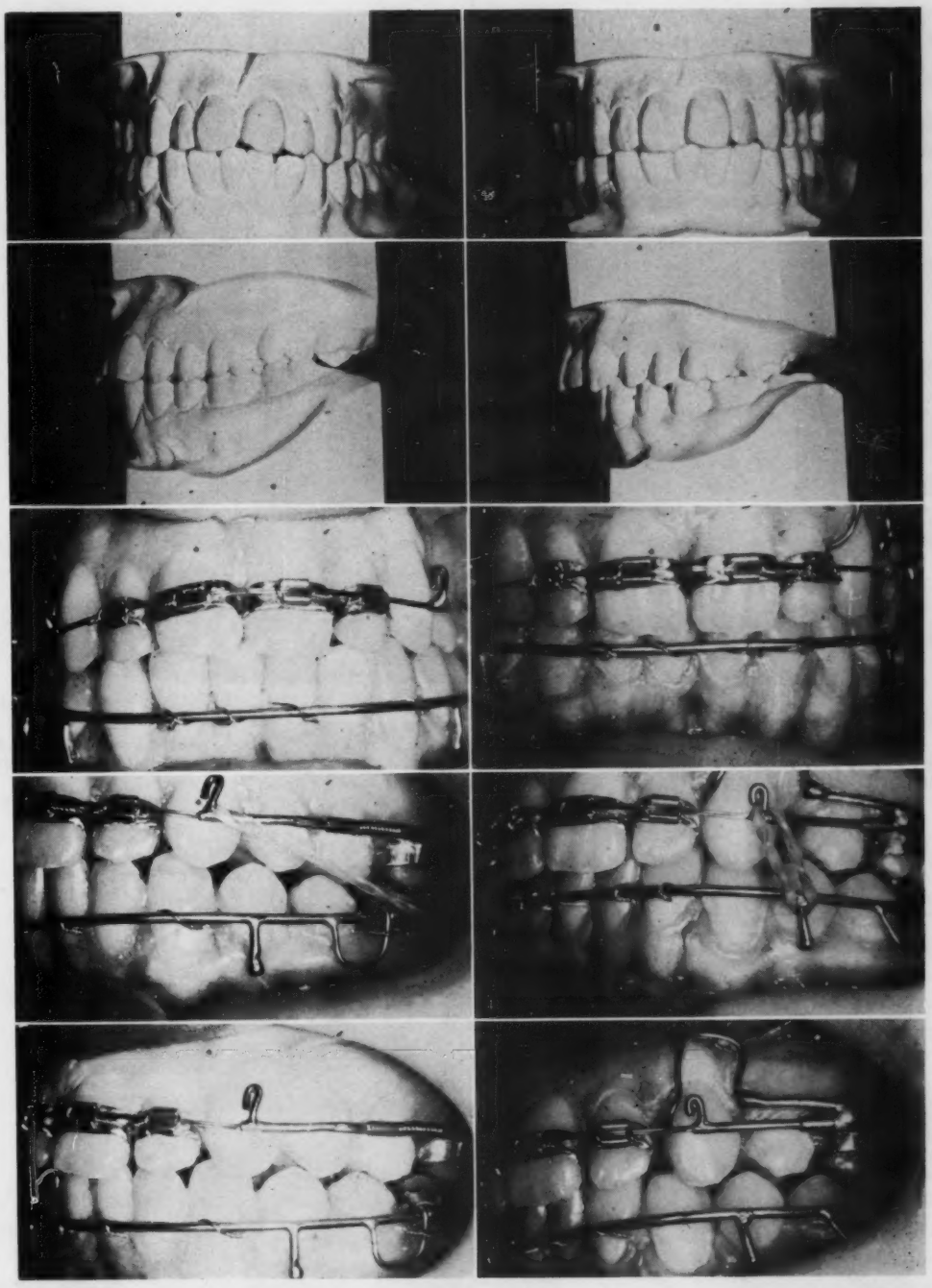


Fig. 12.—Case 4, Jane on the left and Jean on the right. *A*, Anterior views of models. *B*, Left sides of models. *C*, Anterior views of appliances used during first stage of treatment. *D*, Next appliances used during first stage of treatment. Photograph at left shows antero-posterior elastic in place. Photograph at right shows up-and-down elastic traction being used; note auxiliary spring used to move the canine distally. Oral hygiene is apparently good. *E*, Progress being made some four months later than that shown in previous photographs. Oral hygiene is only fair.

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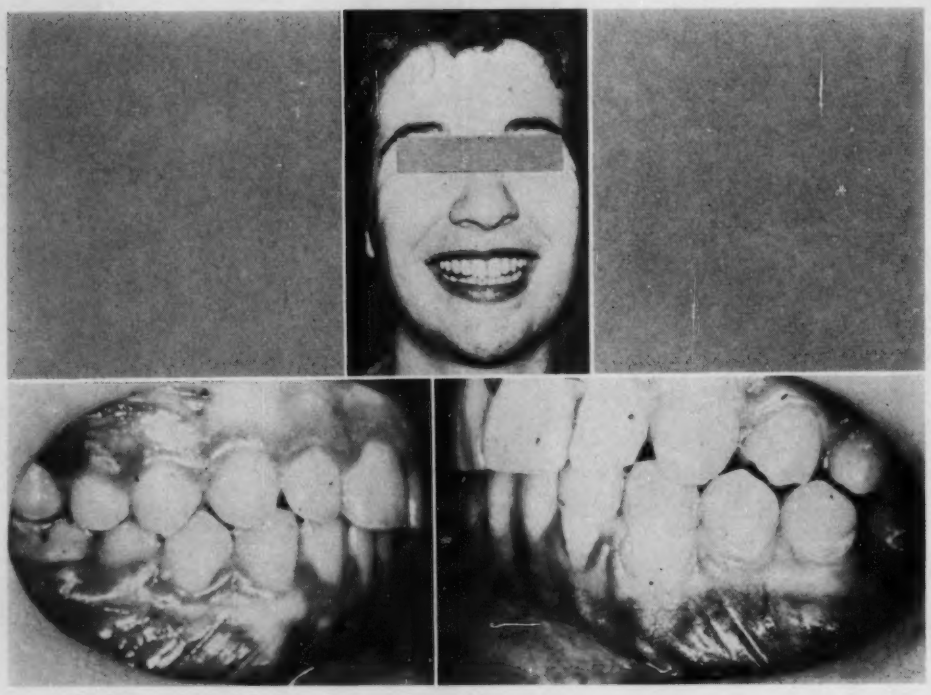
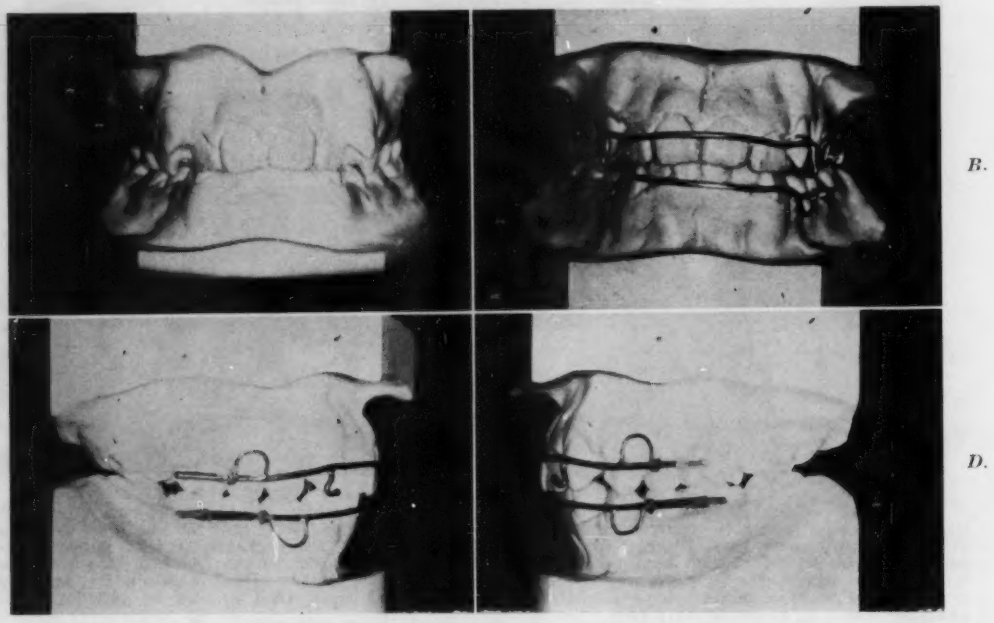
F.



G.

Fig. 12 (Cont'd).—*F*, Results achieved in one patient only (the other young lady ran away and got married). *G*, Poor oral hygiene followed orthodontic treatment; it did not occur during treatment. Right-hand photograph is not in full occlusion.

A.



B.

C.

D.

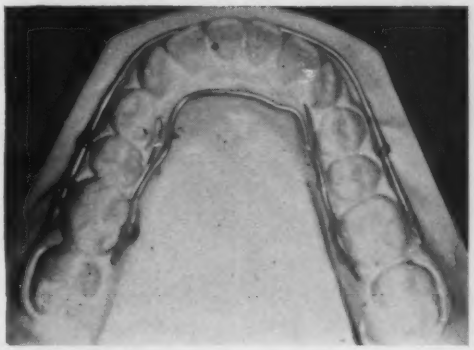
Fig. 13.—Case 5. *A*, Models before treatment. *B*, Appliances used during eight-month treatment period; note increase in vertical dimension. *C*, Right side. Note buccal tubes placed at right angles to long axis of molars for increased resistance to displacement, producing better anchorage. *D*, Left side of same case.

(Continued on following page.)

CASE 5.—The patient was an 11-year-old boy (Figs. 13 and 14). Buccal tubes were placed at right angles to the long axis of the molars for increased resistance to displacement, producing better anchorage (Fig. 13, *B*, *C*, and *D*). Intermaxillary elastics were used in conjunction with coil springs on upper and lower teeth. Because of the extreme loss in vertical dimension and other diagnostic features (Fig. 13, *E*), including the growth potential anticipated at a much later age, I decided to increase arch length instead of extracting premolars.

Careful management with the appliance shown in Fig. 13, *F* minimizes incisal tipping or fanning of the lower incisors. If anterior banding is indicated, it is only for rotation of the incisors after lengthening of the arch. Multiple banding of more than four incisors and first molars results in more loss in arch length due to thickness of cement and bands.

E.



F.

Fig. 13 (Cont'd).—*E*, Occlusal view of maxillary arch; note difference in arch length. *F*, Increase in arch length.

Fig. 14, *A* and *B* shows the patient's profile six months and some four years respectively, after discontinuation of active appliances and active treatment. No retainers of any kind were used. Any reduction in arch length would have resulted in a very displeasing profile.

Fullness immediately following treatment and the complete disappearance of this fullness several years later are shown in Fig. 14 *C*, and *D*. This appearance is nearly always eliminated by growth and development at 18 to 22 years of age.

CASE 6.—Fig. 15, *A* shows a typical Class II, Division 1 case in which there is poor facial development and an apparently underdeveloped mandible. An occlusal guide plane (Fig. 15, *B*) was inserted; the incisors engaged each other, carrying the force of the occlusion. After fourteen months of treatment (Fig. 15, *C*), another occlusal guide plane was constructed in an attempt to gain greater vertical dimension.

Fig. 15, *D* shows the case after treatment. (I never use a retainer with an inclined plane to attempt to maintain a Class II correction. If this is necessary, then the Class II

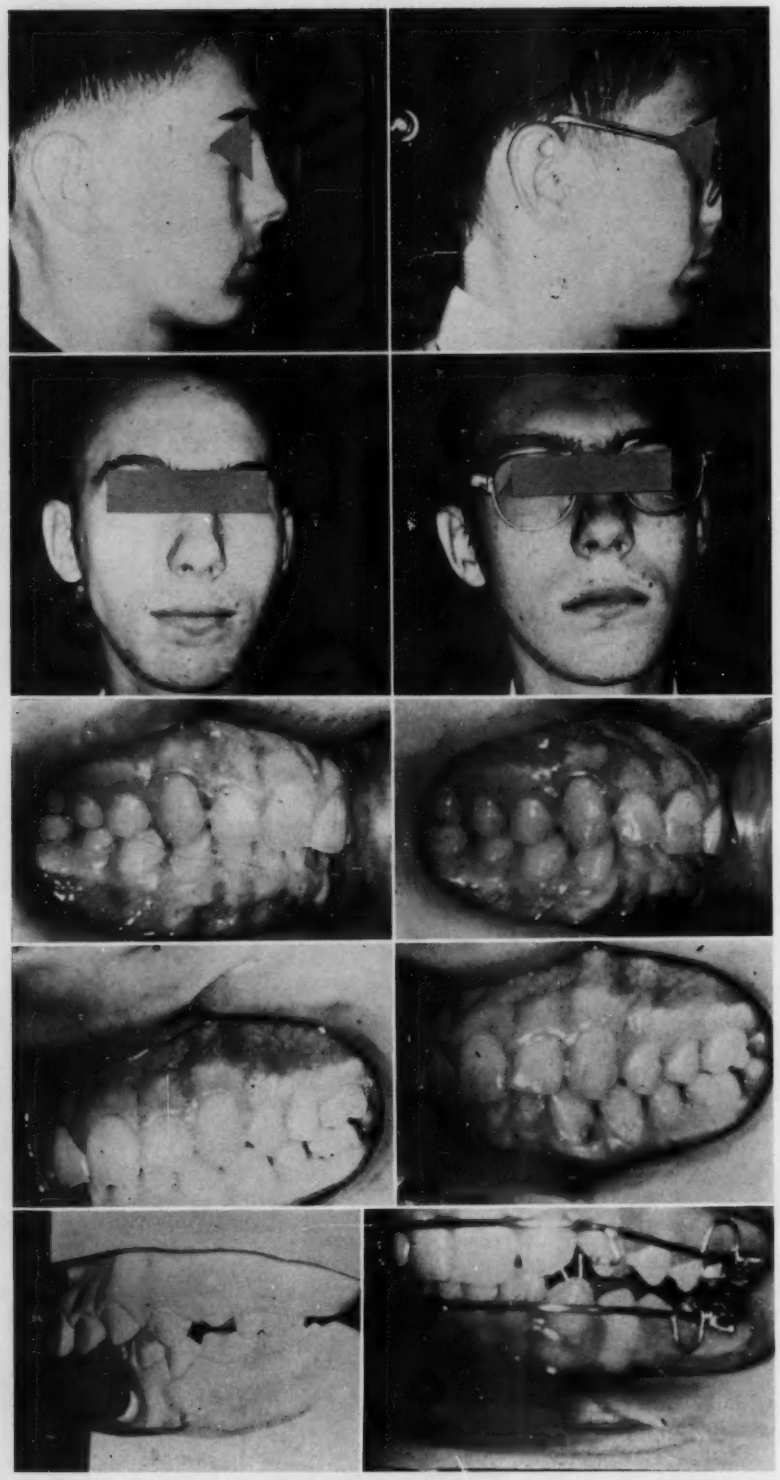


Fig. 14.—Case 5. *A*, Profile of patient six months after active appliances and active treatment were discontinued. *B*, Same patient some four years later. *C* and *D*, Fullness immediately following treatment and complete disappearance of this fullness several years later. *E* to *H*, Intraoral photographs six months following treatment (*E* and *G*) and some four years later (*F* and *H*). *I*, Models showing sufficient mandibular arch length for eruption of teeth. Note severe lack of vertical dimension, a contraindication to extraction of upper first premolars. *J*, An attempt to occlude immediately after appliances were placed. The only possible functional occlusion is to slide the mandible forward, as guided on the occlusal guide plane, into occlusion. Weight of occlusion is carried by the incisors against each other. Intermaxillary elastic traction is initiated immediately.

correction has already failed and a dual bite, of necessity, must be evident.) As shown in Fig. 15, *E*, the boy had reasonably good facial balance at the end of treatment.

CASE 7.—The girl in this case had a Class II, Division 1 malocclusion (Fig. 16, *A*). In the majority of such cases the late mixed dentition period is the desired time for treatment, since there is a growth spurt during this period.

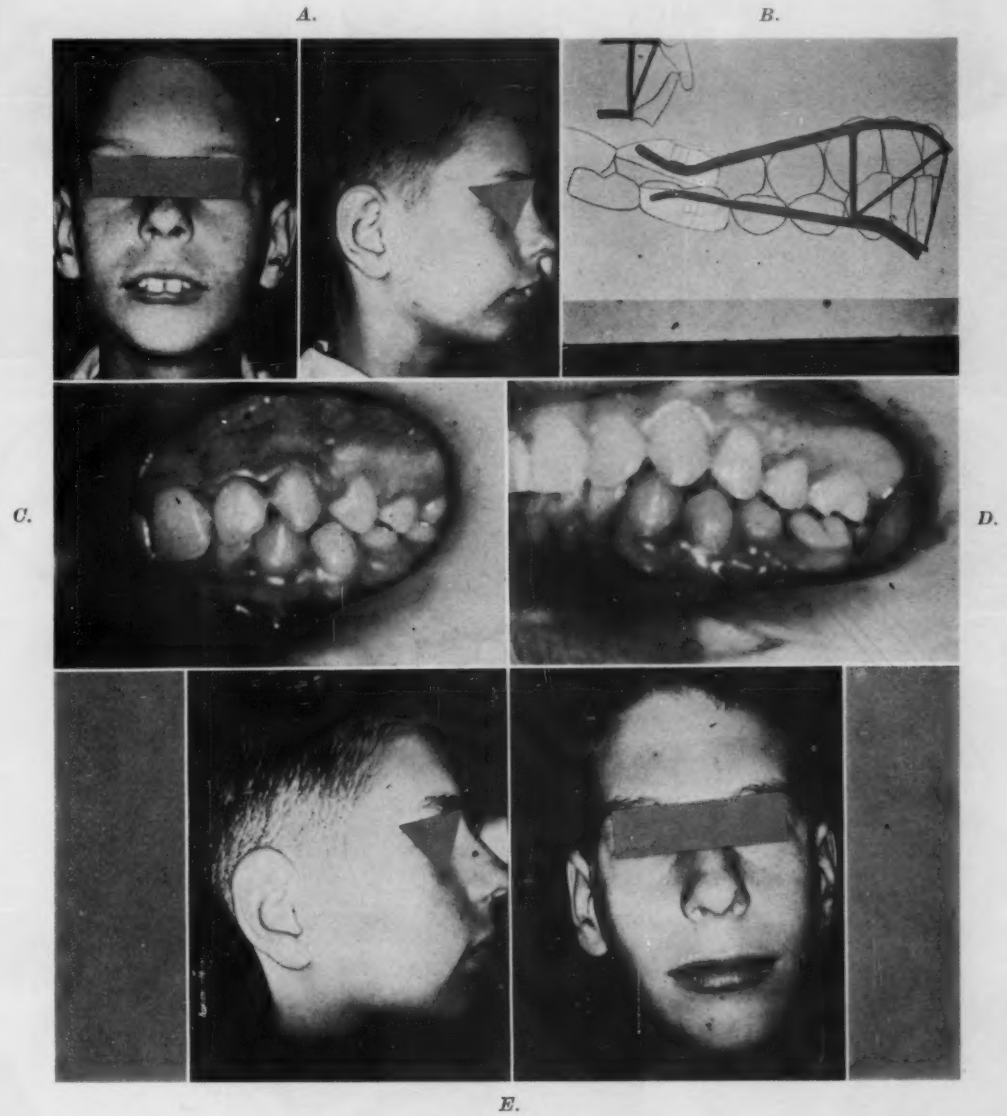


Fig. 15.—Case 6. *A*, Typical Class II, Division 1 case with poor facial development and an apparently underdeveloped mandible. *B*, Mechanics of occlusal guide plane. In upper portion of drawing, note that incisors engage each other, carrying force of occlusion. *C*, Results obtained after fourteen months of treatment. *D*, After treatment. *E*, Reasonably good facial balance.

Treatment with an occlusal guide plane took twenty-five months. The results immediately after completion of active treatment and five years later are shown in (Fig. 16, *E* to *H*.

CASE 8.—Fig. 17 shows before- and after-treatment photographs of a boy who underwent fourteen months of treatment. In this case there was a continual improvement in vertical dimension at various stages of treatment.

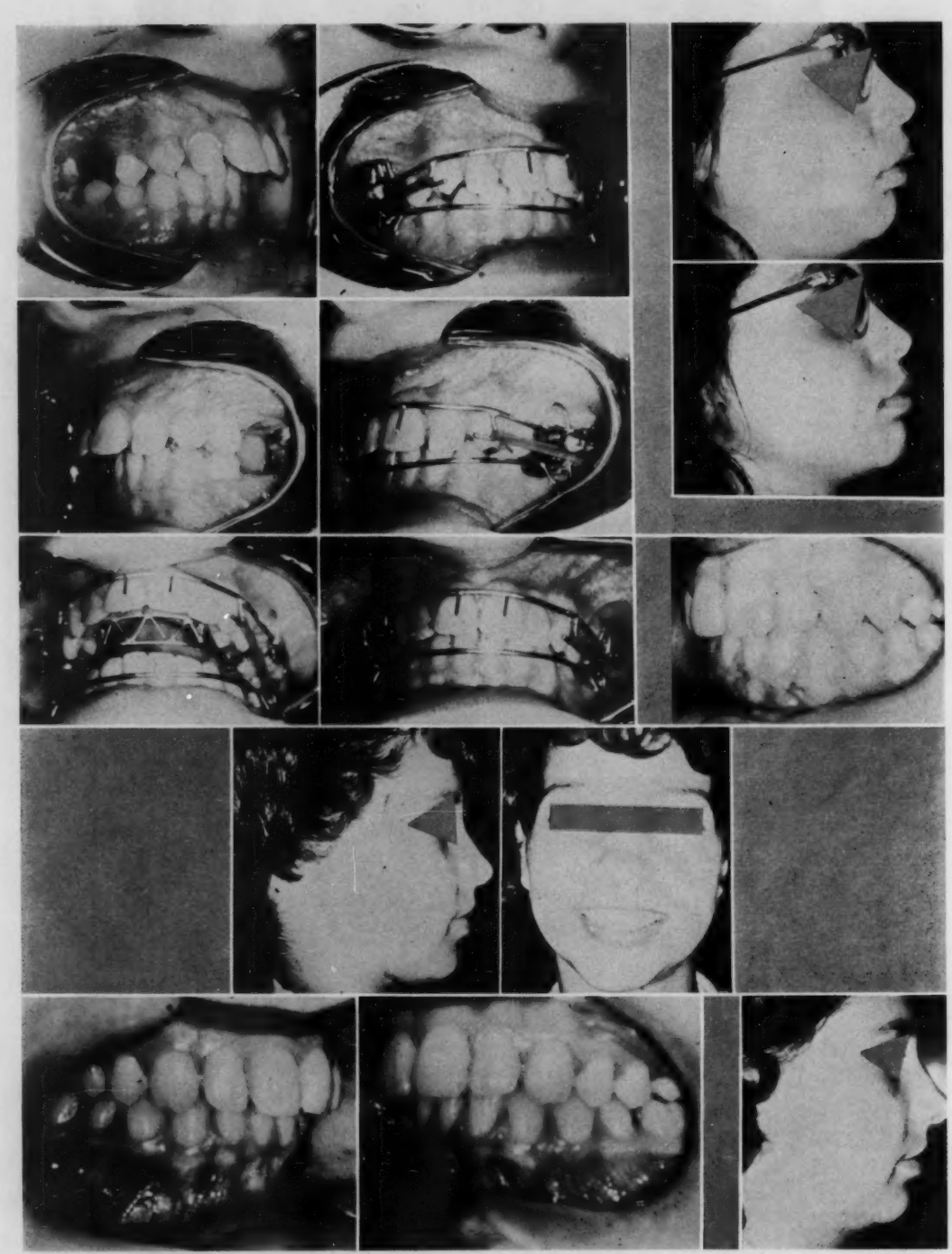


Fig. 16.—Case 7. *A*, Class II, Division 1 case before and after placing of appliances with occlusal guide plane. *B*, Upper photograph shows profile in normal rest position; lower photograph shows profile immediately after insertion of occlusal guide plane. *C*, Left intraoral view of same patient under same conditions. *D*, Anterior view shows patient attempting to occlude teeth; photograph at right shows occlusion with occlusal guide plane in place. *E*, Intraoral photograph immediately following completion of active treatment. *F*, Extraoral photographs taken at end of active treatment. *G*, Intraoral photographs taken some five years later. *H*, Photograph of patient some five years later.

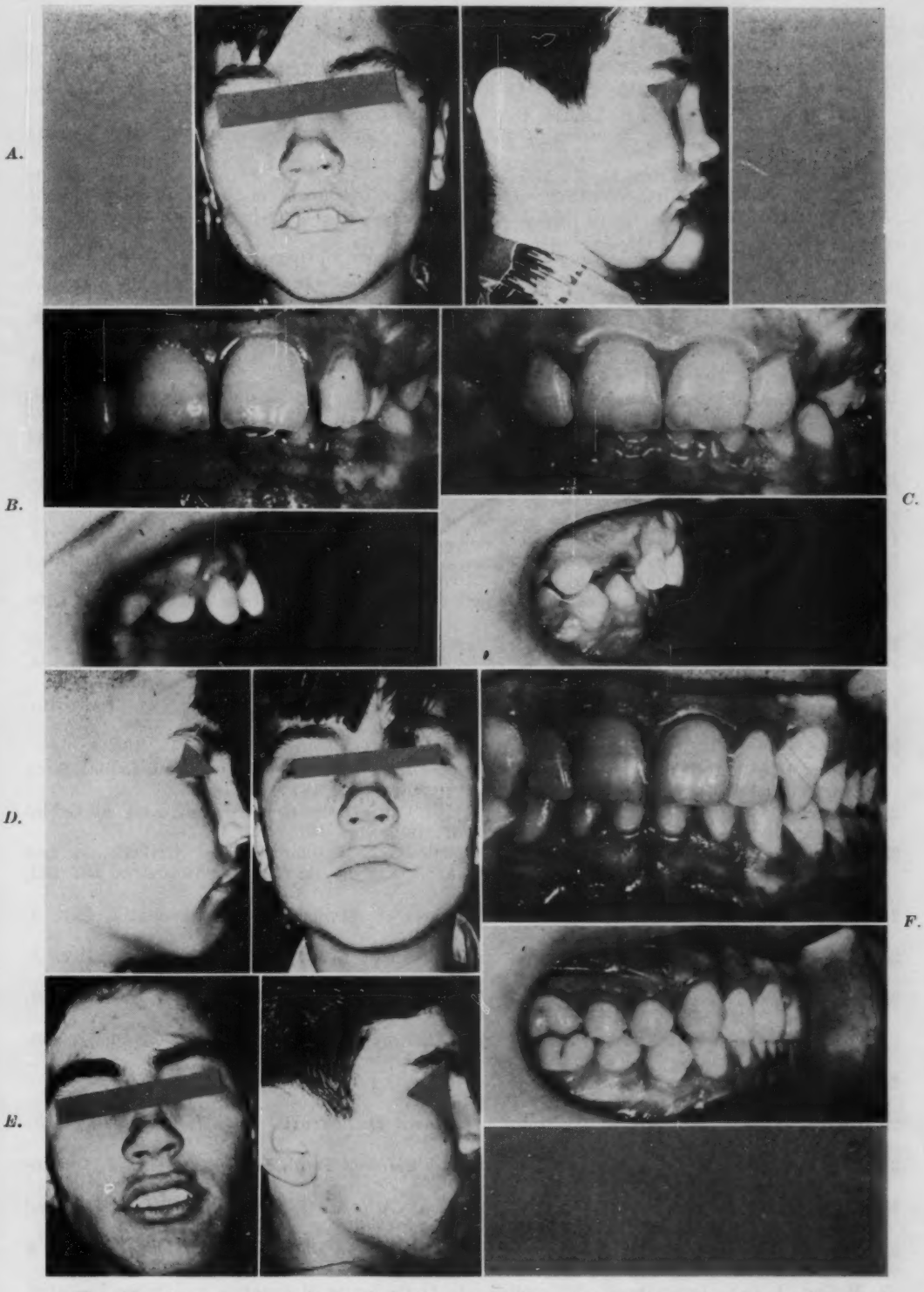


Fig. 17.—Case 8. *A*, Anterior full-face and profile photographs of patient before treatment. *B*, Anterior intraoral appearance before treatment. *C*, Anterior intraoral views after fourteen months of treatment. *D*, Extraoral photographs after fourteen months of treatment. *E*, Patient three years following completion of active treatment. *F*, Intraoral views of same patient. Note continual improvement in vertical dimension at various stages.

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1915 BROADWAY.

LIGHT ARCH WIRE TECHNIQUE

Employing the Principle of Differential Force

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THIS article describes the light arch wire technique and some minor changes that have been made in it recently.

The technique has evolved after many years' experience with the edgewise technique. It neither contradicts nor sacrifices any of the principles of the edgewise technique.

INTRODUCTION

I shall explain the technique mainly by giving details of treatment of a patient with a severe Class II, Division 1 malocclusion. There will also be brief descriptions of treatment of other patients. Before treatment of patients is described, however, the various arch wires, bands, and auxiliaries will be portrayed and some of the principles of differential force will be described. It will then be easier to understand the descriptions of treatment that are to follow.

Fig. 1 shows a plain arch wire with intermaxillary hooks. The slight bends in the anterior region of this arch wire were made to overmove slightly irregular teeth beyond regular alignment. Overmovement of rotated teeth is an excellent form of retention, for the teeth are less likely to move back any more than to regular alignment after treatment. Arch wires are made of specially treated round, resilient, stainless steel wire; usually they are 0.016 inch in diameter but sometimes they are smaller.

Figs. 2, 3, and 4 portray arch wires with vertical expansion loops. This looped form of arch wire is used at the start of treatment to make space for and to align teeth that are so irregular, crowded, and rotated that they cannot be aligned easily by plain arch wires. When there is only slight or no crowding, however, there is no need to make these loops in the arch wires. Looped arch wires may also be activated to move spaced teeth together.

Fig. 5 shows an auxiliary arch wire with vertical spurs or projections for torqueing tooth roots lingually, labially, or buccally.

Presented at the annual meeting of the American Association of Orthodontists in Washington, D. C., April 28, 1960.

Fig. 6 shows an arch wire with vertical spurs of slightly different design. The spurs on these auxiliary arch wires project gingivally when the roots have to be moved lingually, and toward the occlusal plane when the roots have to be moved labially. On the left side of Fig. 7, eyelets are portrayed. These are used with ligature wires to torque tooth roots mesially or distally. A torqueing wire is shown on the right side of Fig. 7. Torqueing wires move teeth to their correct mesiodistal axial relations without having to be reactivated.

Fig. 1.

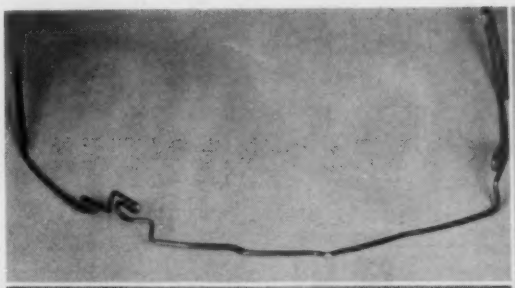


Fig. 2.

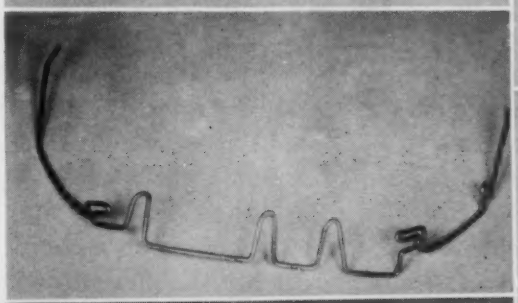


Fig. 3.

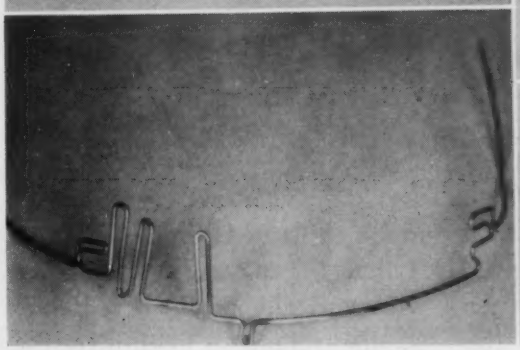


Fig. 4.

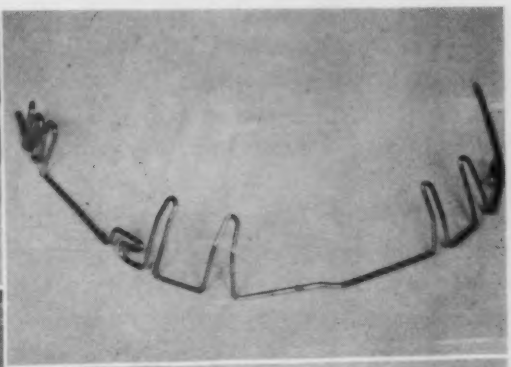
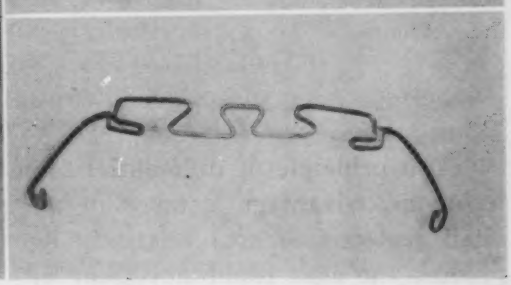


Fig. 5.

Fig. 6.



Horizontal band spurs are shown in Fig. 8. These spurs, attached to the bands mesial or distal to the brackets, are for torqueing tooth roots mesially or distally.

It will have been observed that Dr. Edward H. Angle's ribbon arch bracket is used. Its dimensions have been altered to fit light arch wire.

SOME CHARACTERISTICS OF THE TECHNIQUE

All tooth movements—bodily, torqueing, tipping, and rotating—can be performed. All forms of malocclusion are treated with this technique.

Active treatment time and chairside time are greatly reduced. This is because owing to the high resiliency of the arch wires, tooth movements are rapid and can be conducted over great distances without readjustment of appliances.

The tooth-moving forces are so light that there is less discomfort to patients and there is much less tooth loosening than when heavier arch wire techniques are used.

Fig. 7.

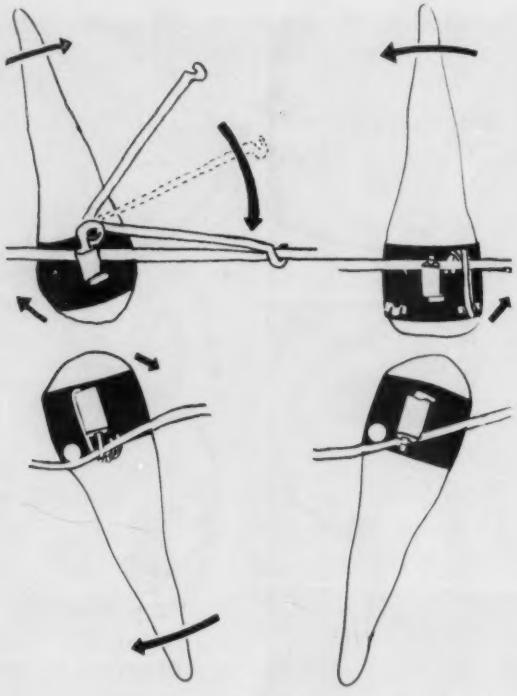


Fig. 8.

DIFFERENTIAL FORCE FOR TOOTH MOVEMENTS

The principle of differential force will now be explained briefly. In this technique, advantage is taken of the principle that for moving teeth with a small root-surface area relatively light arch wire and rubber ligature forces produce the most rapid movement with the least disturbance to tooth-investing tissues. These light forces leave the larger-rooted posterior anchor teeth almost stationary. Conversely, relatively large forces cause the anterior teeth to resist the pressure. Therefore the anterior teeth move very slowly, so that they, paradoxically, can be made to act as anchor teeth while the posterior teeth—the so-called anchor teeth—move rapidly.

When this differential force principle is applied to treatment, there is no difficulty in moving posterior teeth mesially into first premolar extraction spaces, or in moving anterior teeth back into these spaces, according to the requirement of each patient. Of course, an intermediate force simultaneously

moves the posterior anchor teeth mesially and the anterior teeth distally. The principles of differential force have been previously described in more detail.[1]

When differential force is used in non-extraction cases, anterior teeth can be moved back onto basal bone. This is done by taking advantage of the spaces between teeth. With differential force, the positions of posterior teeth can be controlled more successfully than with techniques that employ heavier forces. As the posterior teeth can be prevented from moving too far mesially, the purpose of orthodontic tooth extraction is not defeated.

Another example of the application of differential force is its routine use for reducing deep anterior overbite by the force from tip-back bends in the arch wires, usually placed immediately distal to the bracket on the band of the second premolar. The arch wire force from these tip-back bends is so light that the molars are neither tipped back nor elevated in their sockets, but the force is of the appropriately low value to depress upper and lower anterior teeth in their sockets.

Furthermore, owing to the use of optimum arch wire and rubber ligature forces throughout treatment, it is possible to keep all teeth moving—from start to finish of treatment—by direct paths from their original positions to their corrected occlusion. Teeth are kept moving toward their posttreatment positions without the interruption of having their movement reversed by Class III intermaxillary elastics in preparation for mandibular anchorage to resist force from Class II intermaxillary elastics. It is also unnecessary to use removable appliances, before or during active treatment, to aid the arch wires in moving the teeth. This is because with light arch wires it is easy to conduct tooth movements without causing undue movements of anchor teeth.

Round, instead of rectangular, arch wire is used chiefly because it allows simple tipping of teeth. It is also used because rectangular arch wire would have to be so small to deliver the light forces needed for this technique that it would slip around (even in the most tight-fitting brackets) when activated to torque tooth roots. Then no torque force would be delivered.

The sequence in the stages of treatment differs from that of the edgewise technique. This is because tooth-moving force values can be increased or decreased as required.

TREATMENT OF AN ILLUSTRATIVE CASE

The following case was chosen for presentation because the plan of treatment is typical for this light arch wire technique.

The patient had a Class II, Division 1 malocclusion complicated by pronounced tooth crowding and bimaxillary protrusion (Figs. 9 and 10). Figs. 11 and 12 show the patient after treatment.

Fig. 13 shows the occlusion when it was impossible for any of the four lower premolars to erupt because of lack of space. The lower second permanent molars could not erupt, since they were impacted almost horizontally. Therefore, at this time the four permanent first molars were extracted to allow eruption of the upper and lower first and second premolars and the permanent second molars.

The lower incisors were so far forward off basal bone that part of the labial surface of the root of the lower right central incisor was exposed and denuded of tooth-investing tissues.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 13.

Figs. 14 and 15 show the condition after the eruption of all canines, premolars, and permanent second molars. They also portray the result of treatment.

This patient had the most severe Class II, Division 1 condition that I have seen. The lower right canine occluded distally to the upper right first premolar. On the left side, the occlusal malrelations were almost as severe.

The four first premolars were extracted just before active treatment was started. It is only when patients have the most marked tooth-bone discrepancy that eight teeth are extracted.

Such pronounced discrepancies are estimated to comprise about 3 per cent of cases requiring tooth extraction. Generally, only the four first premolars are extracted.

Treatment of Class II and Class I malocclusions is divided into three stages, as, of course, was the treatment of this patient.

Fig. 14.

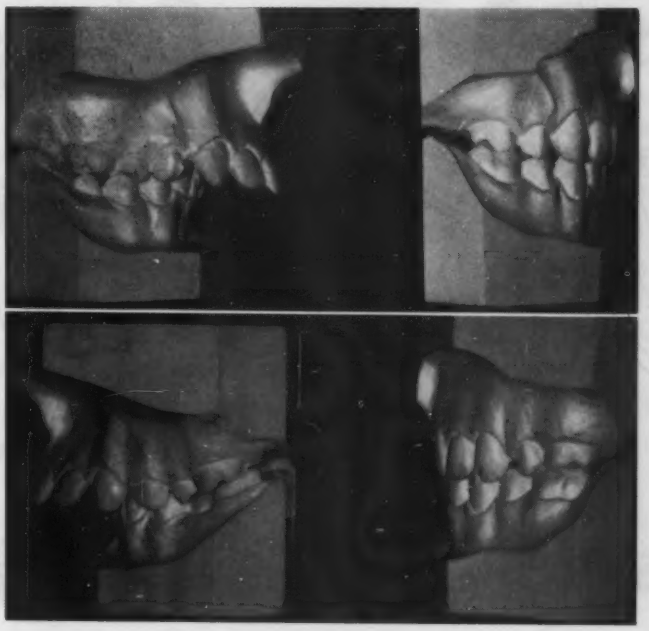


Fig. 15.

First Stage (Fig. 16).—Plain upper and lower arch wires were applied at the start of treatment. Ligature wires, tied loosely around the distal sides of the canine brackets and the intermaxillary hooks, prevented the six upper and lower anterior teeth from moving apart. The four permanent second molars were the anchor molars.

Of course, in all but a few patients, the permanent first molars are not extracted. They are then the anchor teeth and the second permanent molars are not banded.

During this first stage of treatment, the following tooth movements were carried out simultaneously: (1) The slightly irregular upper and lower anterior teeth were aligned. (2) The deep anterior overbite was eliminated. (3) The anteroposterior occlusal malrelations were corrected. (4) The dental

arches were made to assume good contours. (5) The spaces created by extraction of the four first premolars were reduced in size but not half closed. (6) Premolar rotations were overcorrected.

These tooth movements of the first stage of treatment were carried out in the following manner: Slight bends were made in the anterior segments of both upper and lower plain arch wires to cause overcorrection of the slightly irregular incisors. Steep tip-back bends, placed some distance mesial to the

Fig. 16.

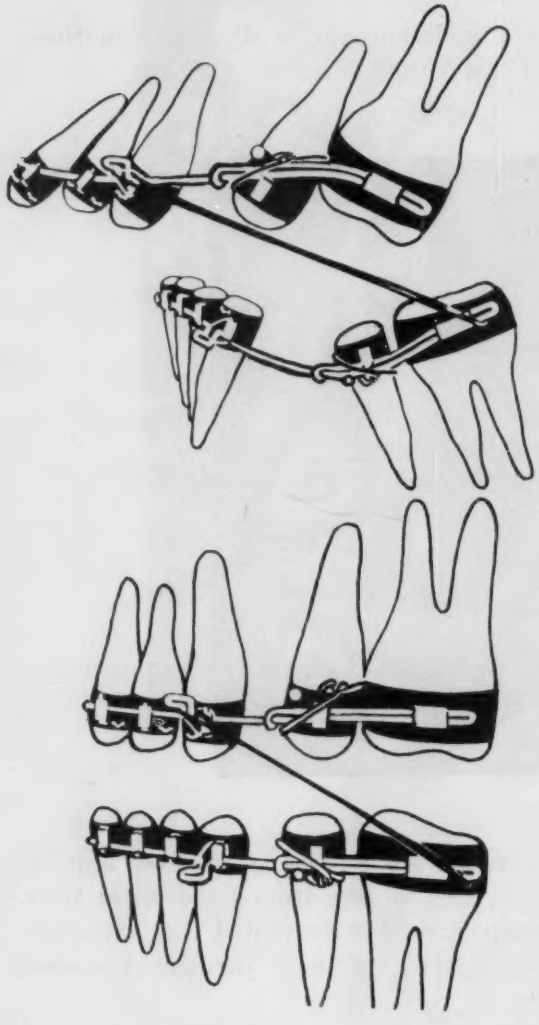


Fig. 17.

Fig. 18.

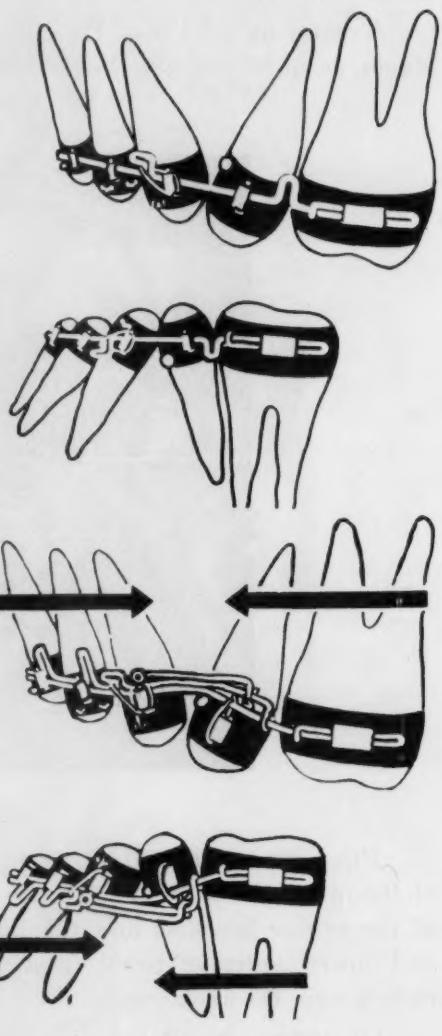


Fig. 19.

molar tubes at the start of treatment in both upper and lower arch wires, depressed the six upper and lower anterior teeth gingivally and thereby eliminated the deep anterior overbite. Also, at the start of treatment, a Class II intermaxillary elastic was applied on each side. Each elastic exerted a force of between 60 and 70 grams. Therefore, the deep incisor overbite, the overjet, and the Class II occlusal malrelations were being corrected simultaneously.

As the operations of eliminating the anterior overbite and of correcting anteroposterior occlusal malrelations were performed simultaneously, each operation benefited from the reciprocal interplay of the tooth-moving forces. If the two operations of eliminating the deep anterior overbite by means of the tip-back bends in the arch wires and of correcting the Class II occlusal relations of the teeth by Class II elastics are not performed simultaneously, neither of the two operations can be successfully accomplished, for the following reason: Class II elastics could then not tip the upper anterior teeth back beyond the point where they would strike the lower anterior teeth. This striking would cause the lower molars to be moved mesially by the Class II elastics. Also, the anterior bite opening, brought about by the tip-back bends in the arch wires, would collapse unless maintained by the edge-to-edge occlusal relations of the incisors that had been attained with the Class II elastics.

We will now continue with the description of the patient's treatment. The Class II elastics were tipping back the six upper anterior teeth simultaneously, but the upper posterior teeth were not being moved distally by the Class II elastics because the distal ends of the arch wire were able to slide back freely through the molar tubes. Therefore, the upper extraction spaces became smaller.

At the same time, the distal ends of the lower arch wire were sliding back freely through the lower molar tubes, so that the lower extraction spaces were becoming smaller—not because the lower posterior teeth were being moved mesially to any appreciable extent by the Class II elastics but because the six lower anterior teeth were being tipped back onto basal bone.

There has been no satisfactory explanation, so far as I am aware, for this tipping-back of the lower anterior teeth when no deliberate attempt is being made to close the lower extraction spaces.

Fig. 17 shows the condition at the end of the first stage of treatment. At this stage Class II occlusal relations are always purposely overcorrected until the molars almost reach Class III relations and until the incisors are in edge-to-edge relations. This occlusion is maintained throughout treatment by Class II elastics until just before active treatment is finished.

Second Stage of Treatment.—The only purpose of the second stage is to complete the closure of the extraction spaces. In each of the four buccal segments, an elastic is hooked over the distal free end of the arch wire. It is brought forward and hooked onto the intermaxillary hook to close the extraction space. Treatment is certain to fail if horizontal space-closing elastics are worn during the first stage of treatment. The only exception to this rule will be mentioned later. Space-closing elastics are identical in size and strength with those used for intermaxillary elastics. The six upper and lower anterior teeth were not moved back bodily but were simply tipped back simultaneously to close the extraction spaces. While the extraction spaces were being closed, Class II intermaxillary elastics also had to be worn by this patient, as by all Class II patients, to maintain the previously overcorrected anteroposterior occlusal relations of the teeth.

Fig. 18 shows the condition at the end of the second stage of treatment. The appearance of the patient at this stage was far from pleasing. Only in patients with marked bimaxillary protrusion does the backward tipping of upper and lower anterior teeth become as pronounced as it was in this patient.

The crowns of anterior teeth are allowed to tip back instead of being moved back bodily because their bodily movement would so strain the molar anchorage that the molars would be moved too far mesially.

Those learning to use this technique are likely to become so alarmed by the unpleasant appearance of their patients at this stage that they may be afraid to continue and may therefore give up in the middle of treatment. Therefore, all stages of treatment, carried out by experienced operators, should be observed by those who intend to start using this technique. Also, before starting to use this technique, the orthodontist should take a comprehensive course of instruction in its use.

Fig. 20.

Extraction spaces are not closed until after Class II elastics have corrected anteroposterior occlusal relations, for this ensures that the Class II elastics will not move the lower anterior teeth labially off basal bone. In other words, the extraction spaces act as safety valves to prevent mandibular anchorage failure.

Third Stage of Treatment (Fig. 19).—The third and final stage of treatment is designed to put all teeth into good axial relations, that is, to upright all teeth. At the beginning of this stage, upper and lower auxiliary arch wires containing vertical spurs were applied gingivally to the original arch wires. Thus, the patient simultaneously wore four arch wires—two upper and two lower. The vertical spurs, leaning against the four upper and lower incisors, were activated to torque the roots of these teeth lingually. Also, at the beginning of this third stage, the horizontal band spurs at the mesiogingival angles of all the second premolars were used to move the crowns of these teeth distally. At the same time the canine roots were tipped back by the springs portrayed in Fig. 7.

From Fig. 20 it may be seen that the roots of the canine and the second premolar are paralleled. During this third stage of treatment the mesiodistal

axial relations of the incisors were corrected, where necessary, by threading ligature wires through the eyelets and extending these ligatures around the arch wires and periodically tightening the ligatures as shown in Fig. 7.

To prevent the extraction spaces from opening, the buccal segments were tied back with ligature wires extending around behind the molar tubes to the intermaxillary hooks.

Fig. 21 shows the appliances in position at the end of active treatment. Class II elastics had to be worn during this third stage of treatment, since whenever they were left off there were signs that the overcorrected antero-posterior occlusal relations would not otherwise be fully maintained.

Active treatment time was twenty-one months. For the first third of the treatment period, disappointingly slow progress was made because the patient was unable to keep appointments regularly. An upper Hawley retainer was worn for six and one half months. No lower retention appliance was worn.

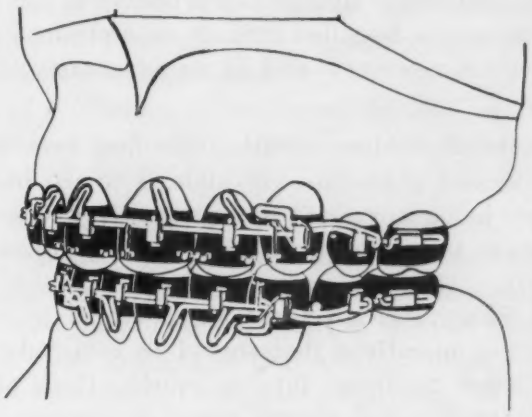


Fig. 21.

The final models, already portrayed in Figs. 14 and 15, represent the condition twenty-three months after the end of the retention period.

When first permanent molars are used for anchorage, small round molar tubes are used and the distal ends of the arch wires are not doubled back as they were for this patient.

The Use of Narrow Brackets.—The chief reason for using such mesio-distally narrow brackets as the ribbon arch bracket is to allow simple tipping of the crowns of the teeth to take place mesially or distally until the third stage of treatment is begun. Brackets that are wide mesiodistally should never be used for this technique, for if anterior teeth are held rigidly to the arch wire in the mesiodistal direction during the first and second stages of treatment mesial and distal movements of the roots of anterior teeth cannot be avoided. In other words, simple mesial and distal tipping of the crowns of these teeth cannot take place.

Root movement of anterior teeth unavoidably occurs if brackets with mesiodistally long arch wire-seating channels, such as tie brackets, are used.

This root movement causes strong resistance to the forces being used to tip anterior teeth back into the extraction spaces. This prevents simple distal tipping of canines. Thus, the posterior anchor teeth will be moved too far mesially and the anterior teeth will be left out too far labially in the outer cortical layer of the bone.

If tie brackets are introduced into this technique, many of the advantages of the differential force principle will be lost and it will then also be found necessary to introduce extraoral anchorage. It is well known that it is impossible to obtain a high standard of results with rectangular arch wire techniques for the most pronounced forms of bimaxillary protrusion and the most extensive excess of tooth substance, even if extraoral anchorage is also employed. High standards for these patients are equally impossible with the light wire technique if wide brackets, such as tie brackets, are employed, even if extraoral anchorage is used as an extra aid.

However, if mesiodistally narrow brackets that permit unrestrained mesial, distal, lingual, labial, and buccal tipping of the crowns of the teeth are employed with the light wire technique, so-called difficult malocclusions can be treated successfully. It is then not necessary, and of no advantage, to employ extraoral anchorage.

Uprighting Second Premolars.—During the first two stages of treatment, the crowns of the second premolars are allowed to tip mesially. While the second premolars are being uprighted during the third stage of treatment, the force exerted to torque their crowns distally helps to prevent the molars from being moved mesially.

It is of vital importance that the three stages of treatment be kept separate. That is, the operations that should be completed during one stage should never be allowed to merge into or overlap those of another stage of treatment. During the first and second stages of treatment the crowns of all teeth except the anchor molars are allowed simply to tip in any directions that they tend to take. Simple tooth tipping is the simplest of all tooth movements and requires less force than other movements. Simple tooth tipping throws less strain on the anchor molars than do bodily tooth movements. Molar anchorage is carefully guarded and preserved by being required only to resist tipping movements of other teeth. Molar anchorage failure is prevented in this way.

Arch Wires With Vertical Spurs.—Auxiliary arch wires with vertical spurs are used to torque incisor roots lingually during the third stage of treatment, instead of the vertical spurs placed in the main arch wire that were formerly used (Figs. 5 and 6).

The change was made because it was found that when a single arch wire with vertical spurs was used the torque force exerted by the vertical spurs transmitted a spiral force along the buccal segments of the arch wire. This spiral force was transmitted distally along the arch wire through the tip-back bends and therefore rotated the molars mesiolingually.

Readjustments to Appliances.—In the case that has been described in this article the upper and lower arch wires were removed once during the second

stage of treatment. This was done to shorten the distal ends that protruded too far back through the molar tubes.

In the third stage of treatment, the upper and lower arch wires were removed for adjustment, so that more accurate occlusion of the teeth could be obtained.

These were the only two readjustments made to the arch wires during treatment.

Summary of the Patient's Treatment.—During the *first stage,* the following operations were carried out simultaneously: (1) Irregular teeth were aligned. (2) The deep anterior overbite was eliminated. (3) Class II occlusal relations were corrected. (4) Upper and lower anterior teeth were tipped back. (5) The contours of both dental arches were brought to good proportions. (6) Extraction spaces were made slightly smaller. (7) Premolar rotations were overcorrected. Incidentally, if patients have molar cross-bite, this is corrected during the first stage.

In the *second stage* all extraction spaces were completely closed. This caused the upper and lower anterior teeth to be tipped back much farther than at the end of the first stage of treatment.

In the *third and final stage of treatment* the axial relations of all but the molar anchor teeth were corrected. Of course, the molars were kept upright throughout treatment.

Variations to the technique are sometimes required. For example, it is sometimes found unnecessary to use arch wires with vertical spurs to upright upper and lower incisors. This is because the labiolingual axial inclinations of the upper and lower incisors are so good at the end of the second stage of treatment that it is then predictable that vertical spurs will not be required. However, it is still necessary in these cases to parallel the canine and premolar roots. In many patients whose upper and lower incisors are only slightly inclined lingually at the end of the second stage of treatment, these incisors are made to incline labially, entirely as a result of the action of the spring wires used to torque the roots of the canines distally.

TREATMENT OF MILD DISCREPANCY CASES

In patients whose discrepancies are mild but sufficient to require extraction of four first premolars, the six upper and lower anterior teeth have to be moved back only a small distance. Therefore, considerable mesial movement of the posterior teeth is required. This is done by applying auxiliary arch wires with slightly activated vertical spurs leaning against the incisors at the time the extraction spaces are being closed. These vertical spurs prevent the anterior teeth from being tipped back and ensure that the posterior teeth will move mesially. This is the only exception to the rule that all teeth except the anchor molars must be allowed to tip until the third stage of treatment.

RESULTS OF TREATMENT OF OTHER PATIENTS

Bilateral Surgical Resection of the Mandible (Fig. 22).—Immediately after completion of active orthodontic treatment, which took eleven months,

the body of this patient's mandible was bilaterally resected in the molar regions by Dr. Russell Barbour of Adelaide, South Australia, so that Class III intermaxillary elastics did not have to be used during treatment.

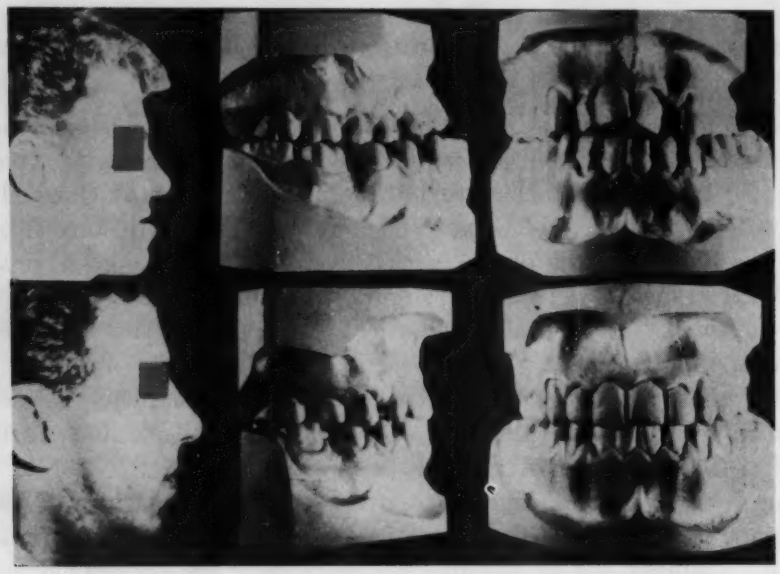


Fig. 22.

Patient Treated Without Tooth Extraction.—The condition portrayed in Fig. 23 was treated without tooth extraction. Appliance therapy took three and one half months. Figs. 24 and 25 indicate that the patient's appearance improved. Fig. 25 shows the patient several years after treatment.

Fig. 23.

Teeth Extracted Before Orthodontic Treatment Was Sought (Fig. 26).—This patient had four first premolars extracted several years before orthodontic treatment was begun. Fig. 27 shows a photograph taken after completion of orthodontic treatment. Appliance therapy took four months. Figs. 28 and 29 show the patient before and after treatment.

Only Four First Premolars Extracted in a Severe Malocclusion.—The patient whose condition is portrayed in Figs. 30 and 31 had four first premolars

extracted. Figs. 32 and 33 show the result of treatment. This patient's condition is presented because it shows that maintenance of stability of mandibular anchorage for Class II elastics is not a difficult problem when differential forces are used for all aspects of treatment. Appliance therapy took

Fig. 24.

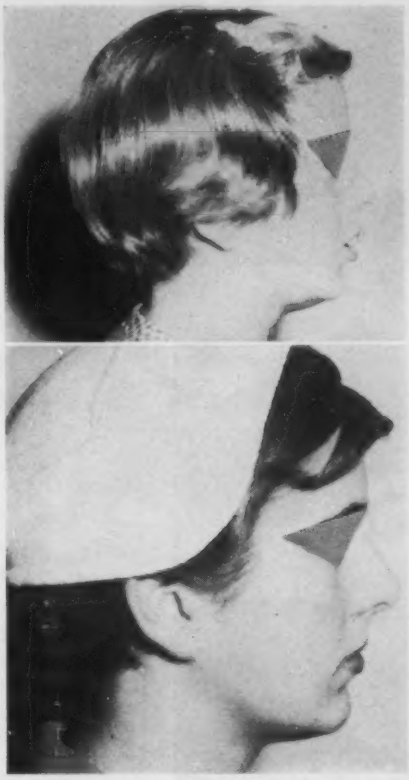


Fig. 25.

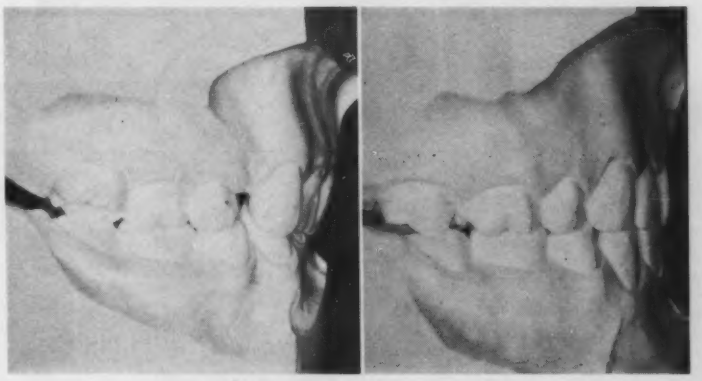


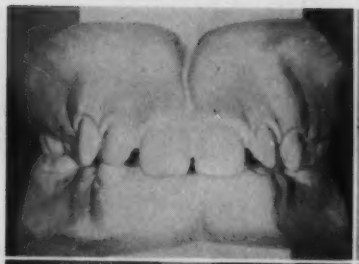
Fig. 26. Fig. 27.

six and one half months. Photographs taken before treatment (Figs. 34 and 35) and after treatment (Figs. 36 and 37) indicate the improvement in facial appearance. The final photographs were taken three years after completion of the retention period.

Fig. 28.

Fig. 29.

Fig. 30.



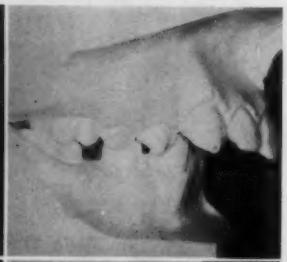


Fig. 31.

Fig. 32.

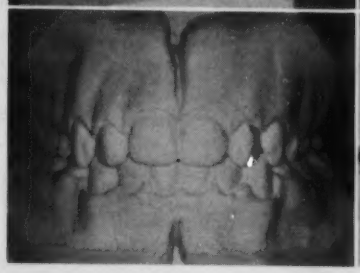


Fig. 33.

Fig. 34.

Fig. 35.

Fig. 36.

Fig. 37.

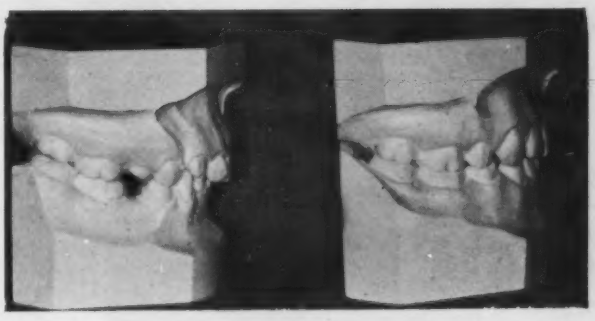


Fig. 38.

Fig. 39.

Treatment of Patient With Impacted Upper Canine.—The patient whose condition before and after treatment is portrayed in Fig. 38 had palatal impaction of an upper adult canine. Appliance therapy took ten months.

The bone covering this canine was removed and a pin was inserted in the tooth, as indicated in Fig. 39. Although the apex of the root of the lateral incisor was resorbed, this tooth has remained vital.

Fig. 40 shows the crown of this canine surgically uncovered. It shows also the method used to move it into alignment. In Fig. 41 the canine is seen to be in alignment.

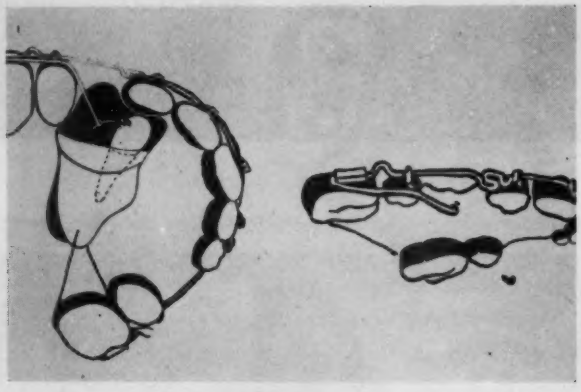


Fig. 40.

Fig. 41.

Figs. 42 to 45 show the patient's face before and after treatment. The final photographs were taken two years after treatment.

It is routine practice to use the light arch wire technique to elevate severely impacted teeth, whether they be incisors, canines, or premolars. Third molars are also elevated by this method if there is sufficient space for them. This elevation of impacted teeth is always done simultaneously with the rest

of treatment that is required. Since it is done during the first stage of treatment, the total time of treatment is not indefinitely prolonged as it is when one merely uncovers impacted teeth and waits for them to erupt of their own accord. The light arch wire force is most suitable for moving impacted teeth rapidly without moving the anchor teeth involved.

Fig. 42. Fig. 43.

Fig. 44. Fig. 45.

CONCLUSION

In conclusion it is necessary to point out that it is not because of superior skill with their hands that orthodontists obtain superior results with the light wire technique as compared with the results that they formerly obtained with other techniques. The reason for this is that optimal arch wire and rubber ligature forces are delivered throughout treatment with the light wire technique. Furthermore, when other techniques are employed for treatment of those frequently occurring severe Class II conditions that are complicated by marked excess of tooth size over jaw size, no more is planned for and no more is achieved than to leave the lower buccal teeth in slightly distal occlusion and also to leave the crowns of the upper incisors with a lingual inclination and the crowns of the lower incisiors with a labial inclination in order to lessen the otherwise considerable overjet of the upper incisors. In contrast, with the light wire technique, these severe Class II conditions can be brought to that high standard

of finished result to which ordinary milder discrepancy cases can be brought. Again, this high standard is possible because optimal tooth-moving force values are employed throughout treatment with the light wire technique.

REFERENCE

1. Begg, P. R.: Differential Force in Orthodontic Treatment, AM. J. ORTHODONTICS 42: 481-510, 1956.

170 NORTH TERRACE

Editorial

THE A. D. A., THE SPECIALTY BOARDS, AND OTHER PROBLEMS

THE American Dental Association, with a membership of around 100,000, has a vested interest granted it by government through the various state licensing boards intended primarily for the purpose of protecting the dental health of the public. The rights and privileges of A. D. A. members, whether general practitioners or specialists, are thus of secondary importance except as they relate to the fulfillment of the principal purpose of the profession. Findings presented in the extensive two-year survey of Dentistry by the American Council on Education indicate the existence of serious deficiencies in the achievement of the main goals of dentistry.

It was the purpose of the Survey to "assess the achievement, resources, and potentialities of dentistry with a view to determining the desirable areas of future growth and development." Financial support was obtained through grants from the W. K. Kellogg Foundation, the Rockefeller Brothers Fund, the Louis W. and Maud Hill Family Foundation, and the American Dental Association.

Among the pressing dental problems facing the American Dental Association as the custodian of the dental health of the American people are some that can be considered the sole responsibility of the A. D. A. Others are the joint concern of the Council on Dental Education and the dental schools, while still others can be solved only by the cooperation of government and the professional agencies of organized dentistry. Specialization, as such, was not considered to interfere to any extent with the provision of dental care for the population and was not an immediate problem.

The dentist: population ratio is becoming more critical, according to the Survey. In 1958 there was one dentist for every 1,692 persons, against one for every 1,679 the previous year. There were 400 persons more per dentist in 1958 than in 1930. An additional 600 graduates annually are needed to maintain even the high ratio of one dentist for 1,900 persons. With population growing at an ever-increasing yearly rate, the relatively stationary number of dentists now being graduated each year, plus the inequitable distribution of dentists, makes it difficult in many areas to take care of the present demand, to say nothing of the potential need, for dental care.

The people of the United States were found to set an almost unbelievably low priority on dental care. While the use of mass media of information for the sale of dentifrices, including those prescribed by "four out of five dentists"

or even by all dentists, is evidently profitable to business, it has not "paid off" as far as the public dental health and the dental profession are concerned.

Ability to pay for dental care, the Survey disclosed, is beyond the means of a sizable portion of the population. There is a general rise in per capita spending for health, but dental expenditures per health dollar dropped from 15.4¢ in 1928 to 11.3¢ in 1957. In the assessment of this deficiency, it should be kept in mind that a great number of those accounted "dentally indigent" are nevertheless not too poor to buy luxury items and artificially created "needs."

Attempts to remedy real or imagined inability to pay for dental service are being undertaken through insurance schemes and fringe benefits provided by employers and by labor unions. In so far as these plans benefit the public health and do not usurp the professional prerogatives of dentists in diagnosis and prescription of treatment, dentistry should give them its wholehearted support. Both labor and management are in error, however, when they base dental health plans on minimum fees and on the "humanitarian and professional" propensities of dentists when it comes to establishing fees for service. To follow such a philosophy is to expect the dentist to shoulder a major part of the cost of providing dental care while he has to exist in an economic milieu which treats him the same as any other consumer. Substandard fees are unrealistic and can lead only to substandard service. In the end the public health suffers.

One of the recommendations made in the American Council on Education Survey deals with a program of dental care of children which calls for the expenditure of $120 million the first year, leveling off within twelve years to an annual expenditure of $94 million. The Survey states that research, on which about $45 million is currently being spent annually, should be increased to $1 billion. These recommendations constitute a formidable task for the A. D. A. and require the careful and considered cooperation of the A. D. A., dental educators, government, and private agencies.

Use of more auxiliary personnel, such as hygienists, assistants, and laboratory technicians, is advocated by the Survey. Before dentistry can benefit fully from increased auxiliary personnel, it must first define the field of operation of the dentist himself. Over thirty-five years ago the late William J. Gies stated in the Carnegie Survey of Dental Schools in the United States and Canada that there is a great need for the closer correlation of the dental curriculums with the demands of the actual practice of dentistry. There is a need at present also to close the gap between technological advancement achieved by dentists in clinical practice and the various subjects taught in the dental schools.

Dental education and practice could be benefited by a joint council of dentists and dental manufacturers working with the Bureau of Standards in the evaluation and appraisal of new instruments and equipment, some of which are currently used in other fields but which could be adapted for dental practice to the advantage of the latter.

With the important job in public health facing it, the A. D. A. should consider calling on the recognized dental specialties to put their own houses in order, where necessary, with the help of an interspecialty council, which should include A. D. A. representation, similar to that established by the medical specialties.

The American Medical Association has an Advisory Board for Medical Specialties, consisting of representatives from each of the approved boards, to "act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists."

Before setting up general educational standards for the specialties, it is even more important to see that larger faculties and more major instructional personnel are made available. More than the usual number of dental schools are now in need of major faculty personnel. This applies to the undergraduate level as well as the graduate level. The recruitment and training of teachers of dentistry present a basic problem in dental education.

It is understandable that the A. D. A. should set up certain general qualifications relating to the definition of areas of specialization and to ethical and educational standards. The details of professional standards for specialty qualifications, however, should be left in the hands of the recognized and accepted specialties themselves.

J. A. S.

Report

REPORT ON THE SYMPOSIUM ON GROWTH*

IN THE summer of 1958 a Workshop on Orthodontics was held in Ann Arbor, Michigan. The Research Committee of this Workshop was assigned the task of reviewing the scope, the status, and the needs of current research in orthodontics. In the course of its discussions, the Committee became increasingly aware of a number of commonly recurring questions which clinicians were asking about growth. Typical of these questions were the following: (1) How does growth influence the treatment of a malocclusion? (2) At what ages can maximal facial growth be anticipated? (3) Should sex differences in growth increments and maturation influence the plan of orthodontic treatment? (4) What effect does growth have on the stability of a treated case? (5) How predictable is the pattern of craniofacial growth and development? (6) Can appliance therapy stimulate or retard the growth of the face?

It became clear that most of these questions centered upon the field of human growth and that the answers depended upon basic research in many areas directly and indirectly associated with the phenomena of growth. Because of the vast scope of this field, pertinent research is being carried out in such apparently diverse disciplines as histology, biochemistry, gross anatomy, anthropology, embryology, genetics, and physiology. Additional knowledge bearing upon human growth accrues from certain clinical specialties, such as orthopedic surgery, pediatrics, pedodontics, and orthodontics. The Committee agreed, however, that only an insignificant fraction of the research is being contributed by the clinical fields. Since the bulk of the accumulated knowledge of growth in its manifold aspects is scattered throughout the vast body of scientific literature, it becomes literally impossible for the orthodontist to acquaint himself even superficially with the bare facts, to say nothing of achieving any meaningful synthesis. The problem, if not the answer, became clear: How can this basic information be made available to the specialty of orthodontics?

A second problem then arose and was discussed at length by the Committee: Can orthodontics itself contribute significantly to basic information about growth? This question led, in turn, to an inquiry into the nature and caliber of orthodontic research at the present time. There was general agreement in the Committee that, on the whole, orthodontic research as represented in the current clinical journals leaves something to be desired. Inadequacies

*The Symposium, held at the National Institute of Dental Research, Bethesda, Maryland, April 28-30, 1960, was sponsored by the American Association of Orthodontists and the Tweed Foundation for Orthodontic Research.

in background information, conceptual approach, methodology, and techniques were noted. It was apparent that the current training program for the clinical orthodontist is not a substitute for the development of a competent scientific investigator. A basic problem then emerges: Shall the orthodontic curriculum aim at producing a researcher as well as a clinician? Or should the orthodontist be discouraged from undertaking basic research? Is there a middle ground, wherein the graduate student of orthodontics can obtain a background that will inspire and enable him to read critically the scientific literature that is the chief source of basic information for his discipline?

In recognition of the fundamental nature of these two problems, the Committee appointed an *ad hoc* subcommittee to explore possible avenues of approach. The subcommittee, in cooperation with the Research Committee of the American Association of Orthodontists and supported by funds from both the parent organization and the Tweed Foundation for Orthodontic Research, planned a Symposium on Growth.

The Symposium on Growth was held April 28 to 30, 1960, at the National Institute of Dental Research in Bethesda, Maryland. Active participants represented the following fields of science: biochemistry, genetics, anatomy, histochemistry, physical anthropology, embryology, physiology, and biostatistics.* Orthodontics was represented by three of the participants.** Although the theme of the entire conference was growth, a specific agendum was deliberately avoided. All the discussions were spontaneous, and there was purposely little or no attempt on the part of the chairmen to channel the direction which these took. A preliminary orientation into the background of the Symposium and the basic problems confronting the orthodontist was given to all participants. For the purpose of mutual understandings, growth was defined as "change in size and proportion, differentiation at intracellular, cellular, tissue, and organ levels, development of function, and progressive increase in total integration."

The present report, written by members of the original subcommittee, is an attempt to summarize the salient features and conclusions that came out of this Symposium and to comment on the efficacy of this type of interdisciplinary exchange of ideas and information.

Each discipline represented at the Symposium came forward with its own unique group of techniques for observing and measuring growth. While various approaches differed at times in their scope and emphasis, ranging as they did from studies at the molecular level to changes in entire populations, unification was evident in the desire to study a common phenomenon. This diversity, so

*These fields were represented by: Philip Person, D.D.S., Ph.D., Chief, Special Dental Research Program, Veterans Administration Hospital, Brooklyn, New York; Lester Firschein, Ph.D., Department of Anatomy, State University of New York, Down State Medical Center, Brooklyn, New York; James Scott, Ph.D., Department of Anatomy, Queens University, Belfast, Ireland; Sherwin Cooperstein, D.D.S., Ph.D., Associate Dean, Medical School, Western Reserve University, Cleveland, Ohio; Marvin Burstone, D.D.S., M.S., National Institute of Dental Research, National Institutes of Health, Bethesda, Maryland; Edward Hunt, Ph.D., Forsyth Dental Infirmary, Boston, Massachusetts; Charles Wilde, Ph.D., Dental School, University of Pennsylvania, Philadelphia, Pennsylvania; Colin White, Ph.D., Department of Public Health, Yale University Medical School, New Haven, Connecticut; Melvin J. Baer, Ph.D., Merrill Palmer School, Detroit, Michigan; and Irving Fritz, Ph.D., University of Michigan, Ann Arbor, Michigan.

**Drs. Alton W. Moore, Arthur Craven, and Anders Lundström.

characteristic of the field of growth today, was well exemplified by this Symposium. It quickly became obvious that such relatively new techniques as histochemistry, electron microscopy, and autoradiography have joined the now classic methods of biochemical and anatomic study of growth. No longer need the investigator of facial growth be limited to the techniques of anthropometric or radiographic measurements, vital staining, or metallic implants alone. He is now capable of examining more accurately and meaningfully the alterations at the cellular and molecular levels underlying the gross phenomena. The sites and rates of protein synthesis, enzymatic activity, and bone salt accumulation may now be reasonably well determined, if not absolutely quantified. The metabolic alterations underlying cellular differentiation are becoming increasingly understood.

The techniques of physical chemistry and x-ray crystallography are valuable in establishing the finer details of the processes of crystallization. The still useful methods of experimental surgery, such as muscle or nerve extirpation, may be supplemented by the growth of isolated tissues and organs in artificial environments, thus permitting a more definitive exposition of the mutually interactive but still independent roles of heredity and environment in the determination of form.

Finally, all these data, coupled with more sophisticated methods of mathematical analysis, such as multivariate analysis, differential growth studies, etc., together with strict statistical control, were shown to be useful tools, but only when appropriate experimental design, working hypotheses, and a true, well-grounded understanding of the growth phenomena were well in hand. At this point we might discuss the attitude toward radiographic cephalometry as expressed at this meeting. Applications of this technique must be devised to meet the needs of a specific problem, and not the reverse. Haphazard and adventitious use of this technique does not and cannot supply knowledge. Biologic comprehension must precede its use if meaningful results are to follow. This comprehension, it should be noted, must include the realization that, despite the long and precise work of literally generations of basic scientists, these workers are not yet willing to state that they have arrived at any satisfactory degree of understanding in their own areas of interest and competence.

While the clinician seeks absolute values, he must understand that his laboratory colleague sees only relative and tenuous ones. Specifically, there are no data currently available which will permit the orthodontist to predict the amount and direction of facial growth with any useful degree of accuracy.

It should be added that it was at once apparent that no one person could obtain true competence in all of the aspects of growth. Indeed, hard and devoted concentration is required to master even one of these approaches. During the Symposium, communication between the participants themselves frequently was difficult. This being so, how much more difficult is the task of the clinical orthodontist who seeks to assess the status of the field for his own special interests! In essence, a lack of synthesis was demonstrated. The field of growth is currently undergoing a rapid (indeed, almost explosive) increase

in the accumulation of valuable data. We should be less than candid if we did not remark that the era of synthesis and subsequent transformation of these newer concepts into clinically meaningful terms is not yet at hand.

Indispensable to the advancement of orthodontics is the quality of both clinical and basic research. The difference between clinical and basic research is in their orientation. Clinical research is primarily applied research. Basic research is motivated simply by the desire for knowledge without regard to its possible application. Both types of research, however, demand the same high standards of scientific rationale and methodology.

There can be no argument that clinical research must play an increasingly vital role in the refinement of orthodontic case analysis, treatment, and retention. But clinical research, to be valid, and meaningful, must follow the rules of any other scientific research—that is, it must be problem oriented, it must have significance, it must be properly designed and executed, and it must be subjected to the same rigid analytical techniques that are required of research in the nonapplied fields of science. Furthermore, it should not be published unless it meets these requirements. The respect which any profession or discipline is given by the scientific community at large is in direct relation to the degree in which high standards are maintained in that profession's publications.

The thought is often expressed that clinical research requires less training and ability on the part of the investigator than does research in such fields as biochemistry, anatomy, and the like. On the contrary, it is often more difficult, because of the variables involved in clinical situations are hard to recognize and even harder to control.

Many problems that confront the orthodontist as he analyzes and treats his patients are basic in nature and cannot be solved by clinical research alone. For example, the orthodontist may ask: "How much will the mandible of my patient grow during the next two or three years?" The techniques of clinical research (such as roentgenographic cephalometry) by themselves are not adequate to provide an answer. It is necessary to supplement the clinical data with studies of allometry, histology, physiology, histochemistry, and other fields which bear directly upon the biology of the human head. It is imperative that the profession distinguish between superficiality and profound biologic understanding.

Although considerable basic information applicable to orthodontic growth problems already exists, it is scattered in discrete units throughout the scientific literature. Hence, at present this knowledge is unavailable to the orthodontist. The important task of collecting, integrating, and disseminating this body of knowledege is one of the foremost recommendations of the Symposium on Growth. This objective may be accomplished by bringing into the dental schools competent and sympathetic basic science personnel. The problem of securing such persons was discussed by the Symposium. It was pointed out that, because of the existing shortage of trained and qualified research personnel, dental and orthodontic institutions competing for such services must be prepared to meet and counter the attractions of other specialties.

What shall be the role of the basic science cadre in the dental school with reference to orthodontics? The Symposium felt that it was threefold: (1) each scientist could extract from the literature in his field the information and concepts that are of potential significance to the field of orthodontics; (2) each could individually or in concert conduct basic research on a high level; and (3) as a group the scientists could become increasingly aware of the clinical problems so that they could achieve communication with both the clinical instructor and the orthodontic student. By communication was meant the training of the potential clinical researcher in accepted scientific methodology and the indoctrination of the orthodontic student into the language and content of science. The latter aim is designed not to make a basic scientist out of the orthodontist but, rather, to give him an appreciation of (and an ability to comprehend) the relatedness of basic biologic knowledge and clinical problems.

With the above-stated problems in mind, the Symposium members unanimously favored the formation of a new society whose objectives would be (1) to encourage and promote communication between orthodontist and basic scientist, (2) to improve the quality of orthodontic research, and (3) to disseminate to the profession current developments in the field of growth. Acting upon these recommendations, the subcommittee, with the moral and financial support of the American Association of Orthodontics and the Tweed Foundation for Orthodontic Research, drew up plans for the formation of such an organization. The first meeting of this society will take place in Denver, Colorado, on April 16, 1961, in conjunction with the annual meeting of the American Association of Orthodontists.

It is encouraging to observe that the American Association of Orthodontists, through its president, George M. Anderson, its Board of Directors, and its Research Committee, has created a climate conducive not only to the serious contemplation of these problems but also to the implementation of a program to solve them.

Charles J. Burstone
Bertram S. Kraus
Melvin L. Moss
Sam Weinstein

Department of Orthodontic Abstracts and Reviews

Edited by
DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City.

The Metabolism of Oral Tissues: By Philip Person (Conference Chairman), D. Afonsky, J. T. Albright, J. D. Boyd, F. Brudevold, M. S. Burstone, H. R. Catchpole, D. W. Cohen, S. Cohen, B. Eichel, M. B. Engel, J. A. English, C. J. Fischer, H. S. Fleming, R. J. Gibbons, H. M. Goldman, B. S. Gould, Y. Ito, N. R. Joseph, H. Kalter, S. J. Kreshover, W. M. Krogman, D. M. Laskin, R. Levi-Montalcini, W. J. Linghorne, V. F. Lisanti, J. B. MacDonald, G. Manner, J. C. Muhler, N. B. Myant, M. U. Nylen, W. G. Schafer, R. M. Schneider, C. A. Schneyer, L. H. Schneyer, D. B. Scott, J. H. Shaw, F. A. Smith, A. E. Sobel, S. S. Socransky, R. F. Sognnaes, H. Spencer, L. M. Sreebny, S. S. Stahl, L. T. Steadman, G. Stein, J. M. Stolman, O. R. Trautz, and D. Weisberger. (Consulting editor—Philip Person.) *Ann. New York Acad. Sc.* Vol. 85, Art. 1, pp. 1-499, March 29, 1960. New York, 1960, published by the Academy. Price, $4.50.

This monograph is based on a conference on "The Metabolism of the Oral Tissues" held by the New York Academy of Sciences on Oct. 15, 16, and 17 1959, under the chairmanship of Philip Person of the Veterans Administration Hospital, Brooklyn, New York, and the Bureau of Biological Research, Rutgers University. Person presents a chapter on "Some Observations on the Evolution of Oral Tissues," in which he points out that, now that we are beginning to study the "molecular basis of evolution," we shall come to the core of the problem of how cells evolve to possess the faculty of bone formation.

A chapter of interest to orthodontists is one entitled "Oral Structures Genetically and Anthropologically Considered," in which Krogman explains that, while the dentition per se is not completely a genetic isolate, there is abundant evidence that the teeth are often parts of a larger, more generalized genetic complex.

Response of the oral tissues to nutritional and metabolic variables is discussed in relation to tooth formation and dental pathology. Exhaustive studies on the salivary glands range from considerations of salivary gland proteases to papers on amylase activity, endocrine influence, the salivary gland hormone known as parotin, and radiation.

A chapter by Laskin and Engel entitled "Relations Between the Metabolism and Structure of Bone" emphasizes the fact that basically the structural transformations in bone are governed by alterations in cell metabolism.

The monograph is exhaustive and presents all phases of the metabolism of the oral tissues. This is one of the most important contributions on the subject that this reviewer has seen.

News and Notes

American Association of Orthodontists Scientific Program for 1961 Annual Meeting in Denver, Colorado

Basic Principles in Orthodontic Therapy

Mechanotherapy is the most important feature in the daily practice of our specialty. It is the prime method by which we obtain results in the treatment of patients. The practice of orthodontics, however, rests on definite scientific knowledge which encompasses the basic sciences of dentistry, medicine, physical anthropology, radiology, public health, and many other scientific disciplines.

This program is intended to present a re-evaluation and a closer correlation of the basic principles which, whether or not we recognize them as such, enter into every phase of our practice. The essayists appearing on Monday are eminently qualified to present their respective subjects. On Tuesday morning, in the panel discussion, outstanding teachers and practitioners of orthodontics will relate and discuss the essays presented on Monday to the clinical practice of orthodontics and refer questions to Monday's essayists who will sit as a panel. We cannot afford to pay lip service to the scientific entailments of our specialty and continue to ignore them in our practice without suffering disappointment in determining etiology, in establishing diagnosis, in planning treatment, and in our attempts to obtain favorable results from our ministrations.

On Wednesday, at the general and limited-attendance clinics and at the round-table discussions, we shall attempt to bring our presentations and discussion down to "grass roots." The Thursday morning session on "Systems versus Basic Principles" has been arranged with special care. Are "systems" limiting our thinking? Are not basic principles really more important than "systems"? At this session you may obtain the answer.

Your chairman considers it a privilege to have worked with the members of this Program Committee, each one of whom is an authority in his own right and an ardent worker for the advancement of orthodontics.

J. A. Salzmann, *Chairman Program Committee*

Members of Program Committee:

William S. Brandhorst
Ernest D. Klein
Robert E. Moyers
Robert M. Ricketts
Boyd W. Tarpley
Faustin N. Weber
William L. Wilson
Wendell L. Wylie

Program

Monday, April 17, 1961

Official Opening Session (Grand Ballroom)

9 A.M. (William R. Humphrey, President, American Association of Orthodontists Presiding)

Invocation. The Right Reverend Edwin B. Thayer, Suffragan Bishop of Colorado.

Welcome. Mayor Dick Batterton, Denver, Colorado.

Response. Dallas R. McCauley, Los Angeles, California, President-Elect, American Association of Orthodontists.

President's Address. William R. Humphrey. (Cecil G. Muller, Vice-President, American Association of Orthodontists, Presiding)

SCIENTIFIC SESSION (Grand Ballroom)

10 A.M. (J. A. Salzman, Chairman, Program Committee, Presiding)

The John Valentine Mershon Memorial Lecture.*

PRINCIPLES OF CRANIOFACIAL DEVELOPMENT ASSESSED BY EXPERIMENTAL BIOLOGY. Louis J. Baume, D.M.D., M.S., Professor of Dental Medicine, University of Geneva, Switzerland.

Synopsis: Development of occlusion is effected by a series of mechanisms based on physiologic tooth migration. A thorough understanding of the underlying principles of skeletal, muscular, and dental growth is a prerequisite to successful orthodontic therapy. Muscular function which influences the structural arrangement of bones also may induce osteogenic processes at the external surface of the bones. Whether this is by apposition or resorption will be determined by the endochondral growth center and not by a pressure-traction mechanism.

Evidence will be presented that the synchondroses of the cranial base, similar to epiphyseal cartilages of the long bones, effect the lengthening of the skull while the condylar cartilages direct the mandible. Forward development of the facial bones is partly induced by the activity of these cartilage centers. Intramembranous ossification, contrary to endochondral ossification, lacks autonomy.

11 A.M. (Dallas R. McCauley, President-Elect, A. A. O., Presiding)

RECENT DEVELOPMENTS IN BIOLOGICAL STUDIES ON THE OSSEOUS SYSTEM. C. Willet Asling, M.D., Ph.D., Professor of Anatomy and Co-chairman, Department of Anatomy and Physiology, University of California, Berkeley, California.

Synopsis: The essay will deal with the following aspects of the subject:

1. *Developmental.* The embryonic morphogenesis of the face and palate, and the faulty developmental mechanisms leading to maxillo-facio-palatal defects. Maternal pteroylglutamic (folic) acid dietary deficiency during critical stages of gestation.
2. *Nutritional.* Studies on mechanisms and degree of skeletal demineralization experienced by the mother in providing the requirements of the young and of apparent limits of maternal protection. Maternal dietary trace-mineral deficiency.
3. *Endocrine.* The complexity of skull development retards progress in understanding and controlling endocrine factors. A modification of clinical roentgen cephalometric procedures allowing extended studies on rats permits deductions on attainment of normal adult skull proportions, on the sex differences therein, and on the immaturity of form resulting from interference with the endocrine control.
4. *Mechanical.* Current studies include split-line techniques, Stresscoat analyses, application of engineering strength-testing devices, and analysis of mechanical properties of reconstructed models of bones. Although substantial advances are being made, the present limiting factor appears to be the nonhomogeneity of bones and bone. A selected bibliography will be available for distribution. Except for work in other laboratories (chiefly item 4), the above studies have been supported by United States Public Health Service grants, especially A-664.

*This lecture was established in 1959 by Mrs. Harriet Lane Mershon, the late wife of Dr. John V. Mershon (1867-1953), Professor of Orthodontics at the University of Pennsylvania from 1916 to 1925, originator of the removable lingual arch appliance, pioneer in the application of biologic principles in orthodontics, and recipient of the Albert H. Ketcham Memorial Award for 1937.

12:15 P.M. Golden Anniversary Luncheon (Junior Ballroom)

(Charles R. Baker, Chairman; Cecil G. Muller, Vice-President, A. A. O., Presiding)

RESEARCH AND MALOCCLUSION. Stanley M. Garn, Fels Research Institute in Growth and Development, Yellow Springs, Ohio.

2:15 P.M. (William R. Humphrey, Presiding)

Presentation of the Albert H. Ketcham Memorial Award to William B. Downs by Dr. Wendell L. Wylie, President of the American Board of Orthodontics (Grand Ballroom).

3 P.M. (Cecil G. Muller, Vice-President, A. A. O., Presiding)

USES AND LIMITATIONS OF ELECTROMYOGRAPHY IN THE QUANTITATIVE STUDY OF SKELETAL MUSCLE FUNCTION. Henry J. Ralston, Ph.D., Department of Physiological Sciences, College of Physicians and Surgeons, and the Biomechanics Laboratory, University of California Medical Center, San Francisco, California.

Synopsis: The study of the electrical activity of human skeletal muscle provides much useful information in the diagnosis and prognosis of disturbed neuromuscular function. The electromyogram also provides invaluable information regarding the time and duration of muscle contraction. However, the measurement, from electromyographic data, of such mechanical functions as force, speed, and the like is possible only under certain highly restricted conditions. A review will be presented of studies in human muscle in which it was possible to establish quantitative relationships between mechanical functions and the electromyogram. The usefulness in such studies of the "integrated" electromyogram is described. The general conclusion drawn from human studies will be stressed, with special emphasis on their role in orthodontics.

4 P.M. (J. Lyndon Carman, General Chairman, presiding)

SYSTEMIC DISTURBANCES IN RELATION TO GENERAL AND DENTOFACIAL GROWTH AND DEVELOPMENT IN CHILDREN. John F. Crigler, Jr., M.D., Associate in Pediatrics, Harvard Medical School, and Associate Physician, The Children's Hospital, Medical Center, Boston, Massachusetts; Melvin I. Cohen, D.M.D., Assistant Clinical Professor of Orthodontics, Harvard School of Dental Medicine; and M. H. Wittenborg, M.D., Associate Clinical Professor of Radiology, Harvard Medical School.

Synopsis (To be read by Dr. Crigler): The skeletal system has been studied in children with marked growth abnormalities of known cause in an effort to define more specific roles of factors influencing growth. Special studies of dentofacial development in these patients will be presented. Orthodontic problems appear principally in patients with congenital skeletal defects. Systemic diseases, either markedly accelerating or retarding growth and development in childhood, appear to maintain a normally proportioned dentofacial development.

Nonendocrine systemic disorders associated with marked alteration in skeletal growth seldom show equally marked delay in dental maturation, and dentofacial proportions remain normal for developmental age. Endocrine disorders producing dwarfism show the greatest delay in dental and skeletal maturation. Dentofacial proportions, therefore, are usually not significantly disturbed and, with specific therapy, show accelerated normal development. Illustrations of cases will be presented.

8:30 P.M. Public Health Conference.

Tuesday, April 18, 1961

7 to 9 A.M. Board of Directors Breakfast Meeting, Denver Room.

9 to 11 A.M. (William R. Humphrey, Presiding)

PANEL DISCUSSION OF ESSAYS PRESENTED AT SCIENTIFIC SESSION ON MONDAY. (GRAND BALLROOM)

Moderator: Wendell L. Wylie, President, American Board of Orthodontics, and Professor of Orthodontics, University of California.

Panel: Drs. Baume, Aisling, Ralston, and Crigler.

Official Discussors:

Melvin I. Cohen, B.S., D.M.D., Assistant Clinical Professor of Orthodontics, Harvard School of Dental Medicine.

Egil P. Harvold, L.D.S., Ph.D., Professor and Chairman, Orthodontic Department, University of Toronto.

J. Rodney Mathews, A.B., M.A., D.D.S., Assistant Professor, Division of Orthodontics, University of California School of Dentistry.

Robert E. Moyers, D.D.S., Ph.D., Professor of Dentistry (Orthodontics), School of Dentistry, University of Michigan.

Samuel Pruzansky, D.D.S., M.S., Associate Director, Cleft Palate Clinic and Training Program, Research and Educational Hospitals; Associate Professor of Orthodontics, University of Illinois.

(Time available after official discussion will be devoted to general discussion from the audience.)

11 A.M. to 12 M. American Association of Orthodontists Business Meeting (Grand Ballroom).

12:15 to 1:45 P.M. Round-Table Luncheon Discussion in Assembly Rooms 1-2-3 and Junior Ballroom (Boyd W. Tarpley, Chairman)

DISCUSSIONS

Orthodontic Education

Ken Marshall: "Selecting and Training Tomorrow's Orthodontists"

A. P. Westfall: "Orthodontic Education"

Sectional Society Problems

John W. Richmond and Howard H. Dukes: "Sectional Meeting Problems and Programs"

Habits

William M. Flesher: "Thumb-Sucking Corrected Without Appliances"

David C. Hamilton: "Thumb-Sucking—Permissive Treatment"

Cephalometrics

Q. M. Ringenberg: "The Role of Cephalometrics"

Treatment

Ernie Bach: "Age to Start Treatment of Mixed Dentition"

Roy Bovard: "Retention"

Victor Drumm Bowles: "Differential Growth Control in Class II Cases"

Frank Bowyer:

Edward A. Cheney: "Timing and Pacing of Early Treatment"

Raymond M. Curtner: "Retention: Poor—Bad—Indifferent"

L. Bodine Higley: "Anchorage"

Stephen Hopkins: "Mandibular Anchorage Problem"

Frank F. Lamons: "Abnormally Rotated Maxillary First Molars"

Donald C. MacEwan: "Universal Appliance Therapy"

Robert E. Moyers:

William H. Oliver: "The Occlusal Guide Plane (Open-Bite Cases)"

Arnold E. Stoller: "Universal Appliance Therapy"

H. K. Terry: "Moving Molars Distally"

William L. Wilson: "Treatment Planning"

Crozat and Other Removable Appliances
M. B. Bunch: "Streamlining Positioner Treatment"
George B. Crozat: "Treatment With Removable Appliances"
S. D. Gore: "The Crozat Removable Appliance"
F. A. Crimmett: "Dynamic Functional Therapy by Bimler"
John M. Jackson: "The Versatile Removable Lingual Arch"
William A. Parker: "The Crozat Removable Appliance"
Robert Smythe: "Adjusting Crozat Appliances"
William Stevenson, Jr.: "Removable Appliance"

Office Management
Phillip E. Adams: "Oral Clinical Photography"
Earl C. Bean: "Office Procedures in an Orthodontic Practice"
William D. Curtis: "Courtesy in Transferring Orthodontic Patients"
W. A. Giblin: "Orthodontics—Future Area Problems"
C. Edward Martinek: "Office Management"

Temporomandibular Joint
Edward Forrest: "Can Mandibular Posture Influence the Temporomandibular Articulation in the Growing Child?"
Charles Sleichter: "T. M. J.—In and Out of Class II Therapy"

Extraction in Orthodontics
Charles E. Harrison: "Extractions in Orthodontic Treatment"
Paul V. Reid: "Diagnostic Consideration Relating to Extraction"

Public Relations
Fred K. Aldrich: "The Role of Public Relations in Handling Transfer Cases"

Orthodontics in Surgical Procedures
James M. Jolly: "Maxillary Labial Frenectomy"
Robert J. Ponitz: "Mandibular Osteotomy and Osteotomy"

A. D. A. Relationships
M. Duke Edwards: "The A. D. A. Resolution in Los Angeles Relating to Specialists"

2 P.M. Research Session
(Herbert I. Margolis, Chairman: Silver Room)

2 P.M. *Tours:*

United States Air Force Academy, Colorado Springs, Colorado
City of Denver
United States Mint
Ski areas (if open)

Wednesday, April 19, 1961

9 A.M. to 12 M. General Clinics in Upper and Lower Foyer Area, Convention Center (William S. Brandhorst, Chairman)

12 M. Past President's Luncheon (Denver Room)

1:45 P.M. (William R. Humphrey, Presiding)
Presentation of Milo Hellman Research Award by Herbert I. Margolis, Chairman of the Research Committee (Grand Ballroom)

2:30 P.M. (Wendell L. Wylie, Presiding; Grand Ballroom)
A. B. O. Thesis: SECOND AND THIRD MOLARS: THEIR ROLE IN ORTHODONTIC THERAPY. Malcolm R. Chipman, Spokane, Washington.

3:15 P.M. Registered Clinics (Faustin N. Weber, Chairman).
Mezzanine, closed-circuit television; Junior Ballroom, closed-circuit television; Fifth Floor, Rooms 501-502-504-506-508-509-511-512-537-538-540-541-542-543.

Clinic Titles and Clinicians:

"Functional Cranial Components," Melvin L. Moss, New York, New York.

"An Improved Soldering Technic and Its Uses," John H. Parker, Alameda, California.

"Timing Orthodontic Treatment," Alton W. Moore, Seattle, Washington.

"Clinical Cephalometrics, for Orthodontists Not Now Using This Diagnostic and Treatment Planning Aid," L. Bodine Higley, Chapel Hill, North Carolina.

"Prevalence of Malocclusion Among Children Age 13 and 14 in a Fluoridated and Non-fluoridated City," David B. Ast, Albany, New York.

"Recent Advances in Technique and a New Approach to Treatment," Alexander Sved, New York, New York.

"Facts From Practice and Research for the Clinician," J. H. Sillman, New York, New York.

"Begg Technique" (a closed-circuit television presentation), S. James Krygier, Wilmington, Delaware.

"Light Wire Differential Forces" (a closed-circuit television presentation), Joseph R. Jarabak, Chicago, Illinois.

"Beneficial Bone Changes Through Orthodontic Opportunities," Sidney E. Riesner, New York, New York.

"Dentofacial Asymmetries and Their Clinical Significance," Edward A. Cheney, Lansing, Michigan.

"Surgical Correction of Mandibular Prognathism and Micrognathism," Marsh Robinson, Santa Monica, California (Sakae Tanaka, Co-Clinician).

"Interception of Potential Malocclusion in the Deciduous Dentition," J. Rodney Mathews, San Francisco, California.

"The Clinical Application of the Universal Appliance" (Atkinson), Robert J. Gawley, Alhambra, California.

"Orthodontic—Orthopedic Treatment," W. Burnie Bunch, Jacksonville, Florida.

6:30 to 7:30 P.M. President's Reception and Cocktails (Assembly Rooms 1-2-3 and Foyer).

8 P.M. President's Banquet (Grand Ballroom).

Thursday, April 20, 1961

9:30 to 11 A.M. (William R. Humphrey, Presiding)

ROUND-TABLE DISCUSSION (Grand Ballroom): SYSTEMS VERSUS BASIC PRINCIPLES IN ORTHODONTICS.

William L. Wilson, D.M.D., Boston, Massachusetts: Moderator.

Frank P. Bowyer, D.D.S., Knoxville, Tennessee; Director of American Board of Orthodontics: Labiolingual.

Alton W. Moore, D.D.S., Seattle, Washington; Professor of Orthodontics, University of Washington; Director of American Board of Orthodontics: Edgewise.

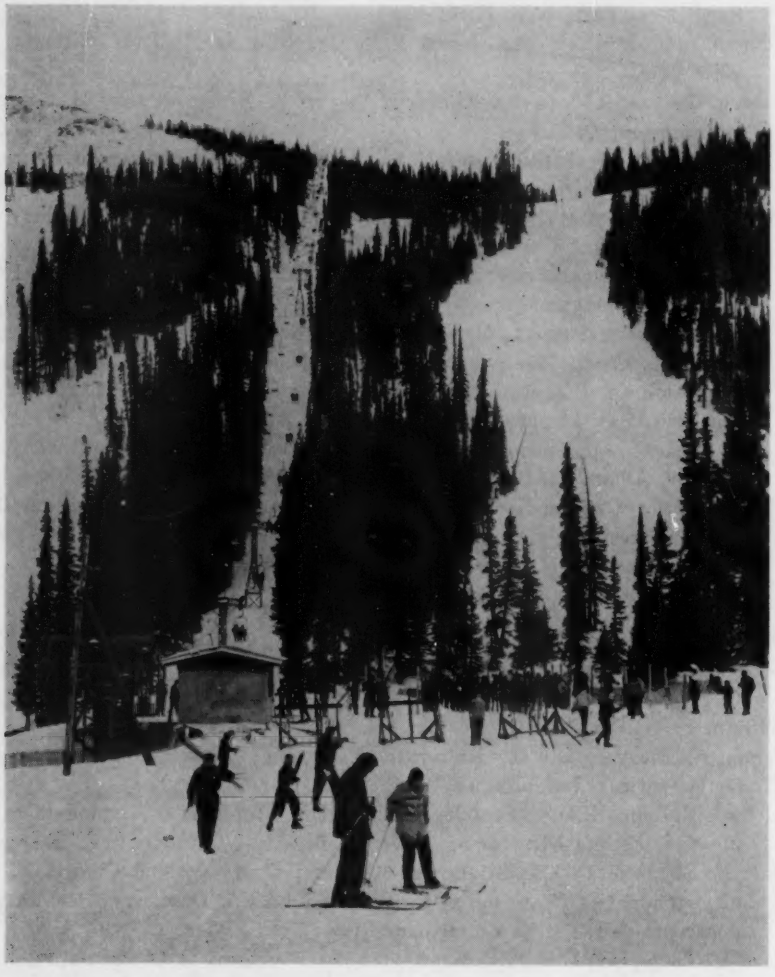
Earl E. Shepard, D.D.S., St. Louis, Missouri; Professor and Chairman, Department of Orthodontics, Washington University School of Dentistry; Secretary-Treasurer, American Association of Orthodontists: Twin-Wire.

John R. Thompson, D.D.S., Chicago, Illinois; Professor of Orthodontics, Northwestern University Dental School: Discussor.

Paul V. Reid, D.D.S., Philadelphia, Pennsylvania; Clinical Professor and Chairman of Department of Orthodontics, Graduate School of Medicine, University of Pennsylvania; Director of American Board of Orthodontics: Discussor.

There is a strong cleavage in orthodontic concepts at present, causing different and opposing opinions regarding objectives and treatment planning. Much of this controversy has its origin in rigid adherence to appliance systems. The purpose of this session is to investigate the basic principles of orthodontic treatment as related to appliance "systems." This whole area will be openly and freely explored on a practical level.

The challenge of such an undertaking requires both a fresh approach as to method and a special group of participants. The usual formal panel method will be abandoned. Initially, three short case reports of controversial Class II borderline cases treated by different methods will be presented. Following this, the session will be opened to an unrehearsed, spontaneous, across-the-table discussion, exploring the relative advantages of the appliances and exposing their associated limitations and problems. There will be a frank evaluation of dangers of appliance "systems" as sources of failure in orthodontic treatment. This will be done on a give-and-take basis.



Union Pacific Railroad photo.

Winter sport near Denver, Colorado, where the A. A. O. will hold its next annual meeting, April 16 to 21, 1961. For the benefit of those who want to do some skiing while in Denver for the meeting, information concerning reservations, etc. will appear in the February issue of the JOURNAL.

In this group are proponents of several different methods of approach. Each participant is widely known. All have firm convictions along with a broad concept of the orthodontic picture and will share freely to explore some of the controversial issues which are the heart and core of our orthodontic problems.

11 A.M. to 12 M. Final Business Meeting (Grand Ballroom).
Adjournment.

American Association of Orthodontists
Registration of Guests at Annual Meeting

To ensure full participation of all active members of the American Association of Orthodontists, the following classification of nonmembers eligible to attend and schedule of attendance fees, which will be charged at the time of registration, have been established for annual session of the Association at the Denver Hilton Hotel in Denver, Colorado, April 16 to 21, 1951.

A. *No Attendance Fee.*
   1. Full-time teachers in university dental schools.
   2. Full-time graduate or postgraduate students in university orthodontic departments. It will be necessary to present a letter from the dean of the school certifying the status of the student.
   3. Dentists from outside Canada or the United States of America who are members of recognized dental or orthodontic organizations.
   4. Regular and associate members of the A. A. O.
   5. All wives in attendance.

B. *Attendance Fee—$10.00.*
   1. Graduates (within the past three years) of university orthodontic departments who are in Government service.

C. *Attendance Fee—$50.00.*
   1. Graduates of University orthodontic departments who are not members of constituent societies of the American Association of Orthodontists.
   2. Other guests.

Applications for guest privileges should be in the hands of the Credentials Committee sixty days prior to the annual meeting, and preregistration of such guests shall be compulsory.

As published in the JOURNAL, those persons who would be classified under the heading of C-1 or C-2 above are required to apply to the chairman of the Credentials Committee at least sixty days before the session for proper forms, which required (a) written endorsement by two active members of the A. A. O. in the applicant's vicinity, (b) that the applicant be a member in good standing of the American Dental Association, and (c) that the applicant never has been rejected for membership in any of the constituent societies of the A. A. O.

Those persons who would be classified under the headings of A or B are required only to submit credentials identifying themselves as being in one of these categories at the time of registration. Registration under categories C-1 and C-2 will be limited in keeping with available facilities and accommodations.

Note: Associate members of the A. A. O. now come within a separate category covering membership in constituent societies and are no longer regarded as guests. Therefore, no fee will be required for persons in this category.

George E. Ewan, Credentials Chairman

1961 Prize Essay Contest, American Association of Orthodontists

Eligibility.—Any member of the American Association of Orthodontists and any person affiliated with a recognized institution in the field of dentistry or associated with it as a teacher, researcher, undergraduate, or graduate student shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain some new significant material of value to the art and science of orthodontics, and it must be the contestant's first research orthodontic publication.

Prize.—A cash prize of $500.00 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if, in its judgment, none of the

entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published. All other essays will be returned.

Specifications.—All essays must be in English, typewritten on 8½ by 11 inch white paper, double spaced, with at least 1 inch margins. Each sheet must be numbered and bound or assembled with paper fasteners in a "brief cover" for easy handling. The title of the essay should appear on the cover. Three complete copies of each essay, including all illustrations, tables, and bibliography, must be submitted. The name and address of the author must not appear in the essay. For purposes of identification, the title of the essay and the author's name, together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity, and status (practitioner, teacher, student, research worker, etc.), should be typed on a separate sheet of paper and enclosed in a plain sealed envelope. The envelope should include the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held in Denver, Colorado, April 16 through 21, 1961.

Judges.—The entries will be judged by the Research Committee of the American Association of Orthodontists.

Final Submission Date.—No essay will be considered for this competition unless it is postmarked on or before Feb. 27, 1961, and received in triplicate by Dr. Albert P. Westfall, University of Texas, Department of Orthodontics, Houston, Texas.

Herbert I. Margolis, Chairman, Research Committee
American Association of Orthodontists;
Professor of Orthodontics
Boston University School of Medicine
Department of Stomatology
80 East Concord St.
Boston, Massachusetts.

American Association of Orthodontists 1961 Research Meeting

Continuing the policy of recent years, the program will consist of a series of ten-minute research reports which may be presented orally or read by title only. All persons engaged in research are urged to participate in this program, which will be held April 16 through 21, 1961, in Denver, Colorado.

Each participant is asked to prepare a 250-word abstract for publication in the AMERICAN JOURNAL OF ORTHODONTICS. Abstracts for publication and the ten-minute oral presentation at the meeting should be carefully prepared to present an adequate description of the import of the investigation.

Forms for use in submitting the titles and 250-word abstracts of research projects will be sent to each dental school orthodontic department and to any individual requesting one. Please send your title and abstract as early as possible, but not later than March 1, 1961, to Dr. Richard A. Riedel, Medical–Dental Building, Seattle, Washington.

Herbert I. Margolis, Chairman, Research Committee
American Association of Orthodontists;
Professor of Orthodontics
Boston University School of Medicine
Department of Stomatology
80 East Concord St.
Boston, Massachusetts

Disability Income Insurance Plan Available To All Active Members of A.A.O. and Associate Members of Constituent and Component Societies

Our American Association of Orthodontists group disability income insurance plan has been in force for one year, as of Oct. 1, 1960. During this short period there have been many accomplishments, including:

1. The extension of the plan to associate members of the constituent societies.
2. A premium reduction of 5 to 20 per cent effective Oct. 1, 1960.
3. A raise in the limit of benefits from $500.00 to $600.00 a month, with a concurrent increase in the number of plans available.
4. The reopening of the enrollment period, beginning September 15 and extending to December 15, during which period all new eligible participants will be guaranteed minimum benefits of $200.00 a month. Also, during this period, the companies have consented to permit all members under age 70 to enroll.

The above innovations are most unusual during the first year of an association contract of this type and are the result of good management, good participation, and favorable experience. Through the continued cooperation of the membership, further favorable experience will be enjoyed and should result in increased benefits and/or further rate reductions.

As stated on many occasions, this is a plan designed by a committee of orthodontists for orthodontists, and we feel that it should play a vital role in our insurance programs.

If you have not yet enrolled in our A. A. O. group disability income insurance plan, we sincerely hope that you will avail yourself of this opportunity to participate by sending in your application at once.

David C. Hamilton, Chairman, Insurance Committee

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Denver Hilton Hotel in Denver, Colorado, April 10 to 15, 1961. Orthodontists who desire to be certified by the Board may obtain application blanks from the secretary, Dr. Alton W. Moore, University of Washington School of Dentistry, Seattle 5, Washington.

Applications for acceptance at the Denver meeting, leading to stipulation of examination requirements for the following year, must be filed before March 1, 1961. To be eligible, an applicant must have been an *active* member of the American Association of Orthodontists for at least two years.

Central Section of The American Association of Orthodontists

The Central Section of the A. A. O. held its 1960 annual meeting at the Park Plaza Hotel in St. Louis, Missouri, September 18, 19, and 20. This meeting was dedicated to the memory of Benno E. Lischer, our former member, noted teacher, and genuine friend, whose courageous pioneer spirit has greatly enriched our profession.

After an invocation by the Reverend Francis O'Reilly, S.J., Vice-President of St. Louis University, President Leo B. Lundergan opened the session and gave the annual president's address.

The following excellent program was presented by most capable speakers:

Different Types of Anchorage Used With the Twin-Wire Mechanism. Joseph E. Johnson, Louisville, Kentucky.

Case Report. Charles M. Taylor, Crockett, Texas.

The Problem of the Rotated Maxillary Permanent First Molar. Frank F. Lamons, Atlanta, Georgia.

Practice Administration in Orthodontics. C. Edward Martinek, Detroit, Michigan.

Putting Cephalometric Films to Work; Two Time-Saving Techniques. Raymond C. Thurlow, Madison, Wisconsin.

Orthodontics as Practiced in Australia. Robert Y. Norton, Sydney, Australia.

Case Report. Fay O. Wardlaw, Little Rock, Arkansas.

Interesting clinics and demonstrations were presented on Tuesday afternoon by the following members:

Joseph E. Johnson	John J. McAndrews	LeRoy P. Krause
George L. Fraseur	Raymond C. Thurlow	W. H. Olin
Max R. Kadesky	W. E. Stoft	W. S. Brandhorst
James W. Monson	George S. Uchiyama	
James F. Bardgett	Deward D. Felcher	Washington University
State University of Iowa		

Entertainment included a get-acquainted cocktail party and an international buffet. For the ladies there was a trip by chartered bus to the Missouri Botanical Garden and a continental breakfast. Members' luncheons and business sessions were held on Monday and Tuesday.

As honored guests we were happy to have William R. Humphrey, president, and Dallas R. McCauley, president-elect, of the American Association of Orthodontists. Both gave interesting talks on current problems and future plans of our organization.

James W. Ford was elected to honorary membership.

The following thirty-nine associate members, being properly qualified, took the customary oath under the direction of President William R. Humphrey and were accepted as active members:

William I. Allen, Alton, Illinois
James W. Anderson, Aberdeen, South Dakota
James F. Bardgett, St. Louis, Missouri
David W. Baumgartner, Kenosha, Wisconsin
Frank Bernardi, Springfield, Illinois
Arthur D. Cumming, Minneapolis, Minnesota
J. Franklyn Daily, Rockford, Illinois
Robert J. Dreiling, Kansas City, Missouri
Milford Franks, Jr., Springfield, Illinois
W. Dale Frost, Clayton, Missouri
Burdett L. Gainsforth, Ogallala, Nebraska
Ernest W. Garling, Chicago, Illinois
Joe I. Herbstman, Champaign, Illinois
Alexander J. Javois, Oak Park, Illinois
Leander R. Jennings, Whitefish Bay, Wisconsin
Frank H. Klepacki, Hinsdale, Illinois
Charles S. Kresnoff, Chicago, Illinois
Fred S. Levin, University City, Missouri
Gordon K. Magnusson, Rapid City, South Dakota
Philip J. Maschka, Omaha, Nebraska
Leo W. Mastorakos, Kirkwood, Missouri
James E. McIver, Iowa City, Iowa
Connell C. Medley, Waukegan, Illinois
Paul S. Meyer, St. Louis, Missouri
Donald N. Moen, Madison, Wisconsin
Thomas L. McKee, Lincoln, Nebraska

Donald H. Nelson, Minneapolis, Minnesota
Martin G. Pesek, Lake Forest, Illinois
Eugene Peters, Racine, Wisconsin
John A. Poronsky, Berwyn, Illinois
Edward S. Prorok, Oak Park, Illinois
Joseph M. Rivera, St. Louis, Missouri
Reinhardt J. Schoppe, Aurora, Illinois
Santo P. Signorino, Elmwood Park, Illinois
Louis J. Snider, Downers Grove, Illinois
Nicholas E. Tapp, Milwaukee, Wisconsin
Oliver E. Wilson, Marshalltown, Iowa
Mark Watanabe, River Forest, Illinois
Herbert G. Yahr, Janesville, Wisconsin

Twenty-nine other associate members were not present but may be elected to active membership at some future session.

The following applicants were elected to associate membership in the Central Section of the American Association of Orthodontists:

James J. Barton, Minneapolis, Minnesota
Donald C. Buckley, Homewood, Illinois
Earl F. Christie, Wilmette, Illinois
Delbert L. Donovan, Ottumwa, Iowa
Daniel H. Drake, Riverside, Illinois
Harold E. Fischer, Waterloo, Iowa
David G. Hicky, Milwaukee, Wisconsin
Thomas E. Ludwick, Lincoln, Nebraska
Fred D. Nolen, Carbondale, Illinois
Frank S. Ryan, Aurora, Illinois
James H. Thomson, Milwaukee, Wisconsin

Membership in the Central Section now totals 310, broken down as follows:

Active members	265
Associate members	40
Honorary members	2
Retired members	3
Total	310

Attendance at this year's meeting totaled 320, representing 150 active and associate members, 17 associate applicants and A. D. A. members, 33 students, 87 ladies, 13 guests, and 20 exhibitors.

The resignation of Dr. Ione Kral, of River Forest, Illinois, was accepted, due to her retiring from practice. Dr. Byron C. Tovstein was designated as a retired member; he discontinued practice because of poor health; five active members were given permission to apply for membership in different constituent sections. The Central Section area was reduced in size when we agreed to give up the Canadian provinces of Saskatchewan and Alberta. Because of geographic location, our members find it greatly to their advantage to belong to other constituent sections.

The following officers were installed for the coming year:

President, Henry E. Colby, Minneapolis, Minnesota
President-Elect, Elmer F. Bay, Omaha, Nebraska
Vice-President, William F. Ford, Winnetka, Illinois

Secretary-Treasurer, Kenneth E. Holland, Lincoln, Nebraska
Representative to A. A. O. Board of Directors, G. Hewett Williams, Winnetka, Illinois
Alternate representative, John Abra, Winnipeg, Manitoba, Canada
Sectional Editor, Charles R. Baker, Evanston, Illinois

Northeastern Society of Orthodontists

The fall meeting of the Northeastern Society of Orthodontists was held at the Hotel Statler-Hilton in Boston, Massachusetts, on Nov. 13, 14, and 15, 1960.

A record number of 538 members and guests were registered for the meeting, which opened with a cocktail party and reception on Sunday night.

At Monday's luncheon Dr. Paul Dudley White, the cardiologist who attended President Eisenhower, addressed the Society on "Middle Age Fitness." William R. Humphrey, president of the American Association of Orthodontists, and J. A. Salzmann, vice-president of the American Board of Orthodontics, addressed the Society at Tuesday's luncheon.

The Society established an annual award of $200.00 to be presented to the outstanding postgraduate student chosen from the orthodontic departments of the universities within the geographical area embraced by the Society.

The scientific sessions began on Monday morning, when President Beebe called the meeting to order, and continued through Tuesday afternoon. The following papers were presented:

Case Report—Genetics. Warren R. Mayne.
Some Problems in Planning Treatment for Class III Malocclusions. Ernest H. Hixon.
Malocclusion and Civilization. Edward E. Hunt, Jr.
Tooth Transplantation in Orthodontic Treatment. Walter C. Guralnick.
Retention Phase of Orthodontic Treatment. Robert E. Moyers.
American Association of Orthodontists' Associateship (Preceptorship) Training Program. Philip E. Adams.
Structure of the Head. Ture Bengtz.
Some Problems Associated With Serial Extractions. Ernest H. Hixon.
Light Differential Force Treatment as Developed by Dr. P. R. Begg. Harold D. Kesling.
Cervical Anchorage: Adjunct and Treatment Appliance. Samuel J. Lewis.
Management of Perverted Function of the Tongue (motion picture). Clifford L. Whitman.

The Board of Censors submitted the following nominations for action at the annual meeting in March, 1961:

President, Irving Grenadier
President-Elect, William R. Joule
Vice-President, Everett A. Tisdale
Secretary-Treasurer, David Mossberg
Editor and Sectional Editor, Joseph D. Eby
Assistant Editor, Brainerd F. Swain
Historian, Leuman M. Waugh
Board of Censors (for 3-year term), Henry C. Beebe
Director to A. A. O. (for 2-year term), Norman L. Hillyer
Alternate Director to A. A. O. (for 2-year term), Richard A. Lowy

The Northeastern Society will hold its annual spring meeting at the Commodore Hotel in New York City on March 5, 6, and 7, 1961.

B. F. Swain.

American Association of Orthodontists Establishes Central Office and Seeks Administrative Secretary

The American Association of Orthodontists has established a central office in Room 303 of the Coronet Building, 225 South Meramec Ave., St. Louis, Missouri.

The office is currently being conducted by Secretary Earl E. Shepard with the aid of Mrs. Pat Kerr, assistant secretary.

It is the desire of the Association, as stated at the annual meeting in Washington, D. C. that ultimately a secretary of administrative or executive stature be employed to head this office.

It is to be remembered that an active, aggressive person is preferred, one who not only has qualifications for running a business office but who has an understanding at least of public relations.

Therefore, if any member has knowledge of a qualified man, he is requested to ask him to contact the secretary at the above address.

American Dental Association

Fluoridation Issue in Recent Elections

At least one million U. S. citizens were "losers" in the November 8 elections, regardless of how favored candidates fared, according to a recent statement by Charles H. Patton of Philadelphia, president of the American Dental Association. Dr. Patton said that this figure represents the approximate population of communities in which fluoridation proposals are known to have been defeated. Meanwhile, as results of fluoridation votes continued to come in, it appeared that voters in only five localities, with a population of about 40,000, had approved the procedure.

Decrying the outcome of the fluoridation votes, Dr. Patton said that it is regrettable that at least one million persons will be deprived of the benefits of a procedure which repeatedly has been proved safe, effective, and economical in reducing the incidence of tooth decay. It is particularly regrettable, he continued, that the group which will be affected most by the outcome of the votes—the children—had no voice in the decisions. The dental executive commented that by the time the children are old enough to vote, they will have passed the age at which fluoridation could be of greatest benefit.

Dr. Patton said that it is "incomprehensible" to him how a well-informed electorate could defeat a fluoridation proposal. He declared that the endorsement of fluoridation by almost every authoritative health agency, both nationally in the United States and internationally, rests on one of the most intensive scientific investigations ever undertaken in the field of public health. Evidence supporting the use of Salk polio vaccine, he noted, is relatively small compared with evidence which supports the safety and usefulness of fluoridation. Despite widespread and relatively quick acceptance of fluoridation, Dr. Patton pointed to "vocal, organized, minority, unreasoned and unreasoning opposition to the fluoridation of water supplies in almost every country where the procedure is initiated or proposed." He cited baseless charges maintaining that fluoridation is Communist-inspired, that it introduces a health-damaging poison into drinking water, that it is being promoted for commercial gain, and that it violates constitutional rights of the individual. Declaring that all of these charges have been proved unfounded, Dr. Patton said that "fluoridation of community water supplies remains the most effective means for preventing tooth decay, the most common disease known to man."

The American Dental Association has endorsed fluoridation since 1950. The organization, according to Dr. Patton, has evaluated and analyzed every objection to the measure and has seen no reason to retreat from its position. On the contrary, he said, competent refutations of the claims of antifluoridationists have only reinforced the Association's stand.

OUTCOME OF FLUORIDATION VOTES ON NOV. 8

(*Note:* This is not a complete roundup of fluoridation votes on Nov. 8 but, rather, a listing of those about which the American Dental Association had received word as of the week of November 21.)

Fluoridation was approved in the following communities:

Kansas
- Herington
- Phillipsburg

Oregon
- Corvallis*
- McMinnville
- Newport

Fluoridation was defeated in the following communities and counties:

California
- Sacramento
- Marin County:
  - Belvedere-Tiburon
  - Corte Madera
  - Fairfax
  - Kentfield
  - Lagunitas
  - Larkspur
  - Marin City
  - Mill Valley
  - Ross
  - San Anselmo
  - San Geronimo
  - San Rafael
  - Sausalito
  - Woodacre

Illinois
- Freeport

Kentucky
- Kenton County

Michigan
- Saginaw

Minnesota
- Faribault
- Willmar

Missouri
- Joplin

New Jersey
- Maple Shade

Ohio
- Cincinnati

Oregon
- Myrtle Point

Pennsylvania
- Sunbury

Wisconsin
- Antigo
- Monticello
- Waukesha
- Weyauwega

TESTING PROGRAM FOR DENTAL SCHOOL APPLICANTS

A "substantial upturn" in the number of applicants for dental schools examined this fall has been disclosed by the American Dental Association. There was a 17 per cent increase in the number of dental school applicants tested this fall as compared with a year ago; 1,561 applicants were examined this fall, as compared with 1,332 in 1959 and 1,486 in 1958. The increase was hailed as a "step in the right direction" by Dr. Shailer Peterson, secretary of the Association's Council on Dental Education. Dr. Peterson tempered his optimism, however, with a warning that the dental profession still faces a stiff challenge in the area of recruitment if the shortage of dentists predicted for 1975 is to be headed off.

The Council on Dental Education conducts an aptitude testing program for applicants to all forty-seven United States dental schools. Dr. Peterson said that the tests enable schools to predict with a high degree of accuracy the probable success of students. Examinations are given three times a year, with the next session scheduled for Jan. 13 and 14, 1961,

*This vote decided continuation of fluoridation.

at centers all over the country. The deadline for receipt of applications for this testing period is December 20. Applications may be sent to the Association at 222 E. Superior St., Chicago 11, Illinois.

The testing program is designed to measure applicants' ability to read scientific information with comprehension; demonstrate manual dexterity; deal intelligently with quantitative materials; use and understand the meaning of words; visualize and mentally manipulate three-dimensional patterns; and demonstrate knowledge and apply principles in the fields of biology and chemistry.

University of Kansas City's First Orthodontic Seminar

The Graduate Department of Orthodontics of the University of Kansas City School of Dentistry held its first annual orthodontic seminar Nov. 6 to 9, 1960, at the Camelback Inn in Phoenix, Arizona. The program was in the nature of a symposium on "The Principles of Appliances."

The University of Kansas City obviously has a new approach to the orthodontic education problem in that it takes the position that all proven techniques of merit in orthodontic practice should become a part and parcel of formal orthodontic training at the university level.

The remarks of Chancellor Drake revealed a marked interest in orthodontic education. Dr. Hamilton B. G. Robinson, Dean of the School of Dentistry, revealed a more than casual knowledge of the entire background of orthodontics from the beginning of the specialty up to the present time. In his discussion of "The Role of Orthodontics in the Dental Health Service," he revealed why and how orthodontics became the first specialty of dentistry, and he reflected a complete and comprehensive knowledge of the private training era of the specialty.

It was announced by the University that the seminar was held on a nonprofit basis and that its purpose was to further the knowledge of members in the profession, to inspire a more intelligent approach to the problems of orthodontic unity, and to demonstrate and emphasize the usefulness of all orthodontic principles and techniques in their clinical application to the manifold problems of dentofacial disharmonies.

It was announced that the University of Kansas City will continue to hold an annual seminar dedicated to the above thesis and purpose as long as the need is evident. This, it is hoped, will bring about a closer relationship among orthodontists, inspire a free exchange of ideas and basic information, and result in eventual harmony and unity within the specialty.

One of the interesting features of the meeting was an open discussion between the essayists and the participants in the meeting. In this discussion each participant was allowed to present any subject for open discussion. This latter policy proved quite interesting and opened many questions of interest to the clinical orthodontist. All subjects were discussed in a formal manner and in complete harmony and good will.

Dean Robinson of the University of Kansas City School of Dentistry said: "While one conference cannot bring together all of the diverse thinking of the past half-century in orthodontics, it was apparent that, in many respects, orthodontists using different techniques are on common ground. Probably there is no one technique which is best for *all* patients, and there may be no patient for whom only one technique can be effective."

The major orthodontic appliances were discussed by authorities on their use. Oren A. Oliver of Nashville, Tennessee, discussed the principles of the labiolingual technique as used in the treatment of various classifications of malocclusion; his presentation included the role of the Oliver occlusal guide plane. Joseph E. Johnson of Louisville, Kentucky, originator of the twin wire appliance, spoke on the principles of the appliance and described its use and adaptation to the correction of dentofacial deformities. Arnold E. Stoller of Seattle,

Washington, discussed the principles of the Universal appliance and the use of differential and light wire forces in the treatment of malocclusion. The edgewise arch mechanism was presented by T. M. Graber of Chicago, who discussed the principles of the appliance as it is used by other members of the profession and as he uses it in his clinical practice. Victor D. Bowles of Kansas City, Missouri, described the multiphase appliance and spoke of its principles and application to clinical problems; he placed particular emphasis on the various phases of orthodontic treatment that might best be carried out with the most desirable characteristics of one appliance while another phase continued to be handled with a more desirable feature of some other technique.

Western Society of Periodontology

The Western Society of Periodontology will hold its eighth annual scientific meeting at the Tropicana Hotel in Las Vegas, Nevada, March 19 to 21, 1961. Robert F. Moyers of the University of Michigan will be the guest speaker.

Further information may be obtained from the program Chairman, Dr. Daniel Feder, 152 South Lasky Dr., Beverly Hills, California.

SEDO (Spanish Society of Orthodontics)

The Spanish Society of Orthodontics will hold its seventh meeting in Valencia, Spain, April 27 to 30, 1961, under the chairmanship of Alberto J. Cervera, Avenida del Oeste, 29, Valencia.

SEDO officers are as follows:

President, D. Costa del Río, Av. del Generalísimo Franco, 353, Barcelona

Secretary, S. Alvarez Biosca, Av. José Antonio, 62, Madrid

Albert Einstein Medical Center

The Orthodontic Department of the Albert Einstein Medical Center in Philadelphia will present a "Light Wire" conference on Wednesday and Thursday, Feb. 8 and 9, 1961. The following speakers will participate:

Milton R. Sims, Adelaide, Australia. The Begg Philosophy and Treatment Technique (including an evaluation of the most recent advances and changes).

Norman M. Cetlin, Newton Centre, Massachusetts. A Cephalometric Evaluation of Changes in Tooth Position Following the Begg Treatment Procedure.

Raleigh T. Williams, La Grange, Illinois. A Cephalometric Appraisal of Completed Cases Treated According to the Technique Advocated by Begg.

Theodore Adler, White Plains, New York. An Analysis of Forces Produced by Light Wire Technique.

Maxwell S. Fogel and Jack M. Magill will serve as moderators for the conference.

Miami Orthodontic Foundation Announces First Annual Orthodontic Seminar

The Miami Orthodontic Foundation announces the first annual orthodontic seminar to be held at the Americana Hotel in Miami Beach, Florida, Feb. 13 to 16, 1961. The program, devoted to a growth and development lecture series, is entitled "The Human Head—A Synthesis of Current Knowledge." The panelists will be Bertram Kraus, Professor of Physical Anthropology, University of Washington, School of Dentistry; Melvin Moss, Professor of Anatomy, College of Physicians and Surgeons, Columbia University; Nicholas

DiSalvo, Chairman, Department of Orthodontics, College of Physicians and Surgeons, Columbia University; and Charles Burstone, Chairman, Department of Orthodontics, College of Dentistry, University of Indiana.

All inquiries should be addressed to the Miami Orthodontic Seminar, Americana Hotel, Miami Beach, Florida.

American Orthodontist Participates in Meeting of Journees Dentaires Internationales de Paris

Dr. Francis J. Loughlin of Jamaica, New York, assistant national chairman of the American Dental Association Section on Orthodontics and Oral Development, represented American orthodontics at the thirty-fourth meeting of the Journees Dentaires Internationales de Paris in November, 1960.

Dr. Loughlin presented two essays—one on modern concepts of comprehensive orthodontics and the other on extractions in orthodontics. In addition, he participated in the orthodontic discussion panels.

Dr. Reitan to Give Seminar at Lenox Hill Hospital

The orthodontic staff of Lenox Hill Hospital will present an all-day seminar on Feb. 20, 1961, by Kaare Reitan of Oslo, Norway. The subject will be "Biomechanics as It Is Related to Our Orthodontic Practice."

The morning and afternoon sessions are by invitation only. The evening lecture, however, is open to all orthodontists and will be held in the Einhorn Auditorium, Lenox Hill Hospital, 76th St. between Lexington and Park Ave., New York, New York.

Notes of Interest

Dr. Herbert L. Adelstein announces the removal of his office for the exclusive practice of orthodontics to Doctors' Center Building, 14077 Cedar Rd., Cleveland Heights, Ohio.

William J. Thompson, D.D.S., M.S., announces the opening of his office for the practice of orthodontics at 106 Manatee Ave., East, Bradenton, Florida.

Dr. Theodore Weisman announces the opening of an office for the exclusive practice of orthodontics at 194 Ridgewood Ave., Brooklyn, New York.

Forthcoming meetings of the American Association of Orthodontists:

1961—Denver Hilton Hotel, Denver, Colorado, April 16 to 21.
1962—Statler Hotel, Los Angeles, California, April 28 to May 3.
1963—Hotel Fontainebleau, Miami Beach, Florida, May 5 to 9.
1964—Palmer House, Chicago, Illinois, May 10 to 14.
1965—Dallas Statler-Hilton, Dallas, Texas, April 25 to 30.

OFFICERS OF ORTHODONTIC SOCIETIES*

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and its component societies. The Editorial Board of the JOURNAL is composed of a representative of each of the component societies.

American Association of Orthodontists

(Next meeting April 16-21, 1961, Denver)

President, William R. Humphrey – – – – – – – – – – Republic Bldg., Denver, Colo.
President-Elect, Dallas R. McCauley – – – – – – 410 S. Beverly Dr., Beverly Hills, Calif.
Vice-President, Cecil G. Muller – – – – – – – – 101 S. 35th Ave., Omaha, Neb.
Secretary-Treasurer, Earl E. Shepard – – – – – – – 225 South Meramec, Clayton, Mo.

Central Section of the American Association of Orthodontists

(Next meeting Oct 1-3, 1961, Minneapolis)

President, Henry E. Colby – – – – – – – 1850 Medical Arts Bldg., Minneapolis, Minn.
Vice-President, William F. Ford – – – – – – – – – 575 Lincoln Ave., Winnetka, Ill.
Secretary-Treasurer, Kenneth E. Holland – – – – – – 1019 Sharp Bldg., Lincoln, Neb.
Director, G. Hewett Williams – – – – – – – – – – 811 Elm St., Winnetka, Ill.

Great Lakes Society of Orthodontists

President, Hunter I. Miller – – – – – – – 1416 Mott Foundation Bldg., Flint, Mich.
Vice-President, George S. Harris – – – – – – – – 18520 Grand River, Detroit, Mich.
Secretary, Edward A. Cheney – – – – – – 1201 Bank of Lansing Bldg., Lansing, Mich.
Treasurer, Carl J. Ericsson – – – – – – – – – 14805 Detroit Ave., Lakewood, Ohio
Director, Harlow L. Shehan – – – – – – 601 Jackson City Bank Bldg., Jackson, Mich.

Middle Atlantic Society of Orthodontists

(Next meeting Oct. 1-3, 1961, Atlantic City)

President, Paul V. Reid – – – – – – – 1501 Medical Arts Bldg., Philadelphia, Pa.
Vice-President, William A. Giblin – – – – – – – – – 85 Park St., Montclair, N. J.
Secretary-Treasurer, Charles S. Jonas – – – – – – Mayfair Apts., Atlantic City, N. J.
Director, Louis E. Yerkes – – – – – – – – – – – 825 Linden Ave., Allentown, Pa.

Northeastern Society of Orthodontists

(Next meeting March 5-7, 1961, New York)

President, Henry C. Beebe – – – – – – – – – 60 Charlesgate West, Boston, Mass.
Vice-President, William R. Joule – – – – – – – – – 549 High St., Newark, N. J.
Secretary-Treasurer, David Mossberg – – – – – – 36 Central Park S., New York, N. Y.
Director, Norman L. Hillyer – – – – – – – 230 Hilton Ave., Hempstead, L. I., N. Y.

Pacific Coast Society of Orthodontists

(Next meeting Aug. 6-10, 1961, Seattle)

President, E. Allen Bishop – – – – – – – – – – – 703 Cobb Bldg., Seattle, Wash.
Vice-President, Murray L. Ballard – – – – – – – 815 Fifth St., Santa Rosa, Calif.
Secretary-Treasurer, Warren Kitchen – – – – – – 2037 Irving St., San Francisco, Calif.
Director, William S. Smith – – – – – – – – – 2530 Bissell Ave., Richmond, Calif.

Rocky Mountain Society of Orthodontists

President, H. C. Pollock, Jr. – – – – – – – – – 915 S. Colorado Blvd., Denver, Colo.
Vice-President, E. H. Mullinax – – – – – – – – – – 8790 W. Colfax, Lakewood, Colo.
Secretary-Treasurer, Hubert J. Bell, Jr. – – – – – Mercantile Bank Bldg., Boulder, Colo.
Director, Ernest T. Klein – – – – – – – – – – 707 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

(Next meeting Nov. 5-8, 1961, St. Petersburg)

President, Charles E. Harrison – – – – – – – – 362 Sixth St. S., St. Petersburg, Fla.
Vice-President, James A. Bell – – – – – – – – – 507 Brent Annex, Pensacola, Fla.
Secretary-Treasurer, William H. Oliver – – – – – – – 1915 Broadway, Nashville, Tenn.
Director, Boyd W. Tarpley – – – – – – – 2118 Fourteenth Ave. S., Birmingham, Ala.

*In order to keep this list up to date, the editor depends on the various sectional editors to notify him immediately of changes in officer personnel.

Southwestern Society of Orthodontists

President, Bibb Ballard - - - - - - - - - - - - 7713 Inwood Rd., Dallas, Texas
Vice-President, Robert E. Gaylord - - - - - - 25½ Highland Park Vlge., Dallas, Texas
Secretary-Treasurer, Tom M. Matthews - - - - - - 8215 Westchester Dr., Dallas, Texas
Director, Nathan Gaston - - - - - - - - - - - - 701 Walnut St., Monroe, La.

American Board of Orthodontics

(Next meeting April 10-15, 1961, Denver)

President, Wendell L. Wylie - - - - - University of California School of Dentistry, San Francisco, Calif.
Vice-President, J. A. Salzmann - - - - - - - - 654 Madison Ave., New York, N. Y.
Secretary, Alton W. Moore - - University of Washington School of Dentistry, Seattle, Wash.
Treasurer, Paul V. Reid - - - - - - - - 1501 Medical Arts Bldg., Philadelphia, Pa.
Historian, B. F. Dewel - - - - - - - - - - - - 708 Church St., Evanston, Ill.
Director, Frank P. Bowyer - - - - - - - - 608 Medical Arts Bldg., Knoxville, Tenn.
Director, Nathan G. Gaston - - - - - - - - - - - 701 Walnut St., Monroe, La.

A List of Orthodontic Societies of the World and Their Principal Officers*

Angle Society of Orthodontia

Secretary, George W. Hahn - - - - - - - - - 2300 Durant Ave., Berkeley, Calif.
Treasurer, Howard Lang - - - - - - - - 1033 Gayley Ave., Los Angeles, Calif.

Chicago Association of Orthodontists

President, Harland L. New - - - - - - - - - - - 309 Touhy Ave., Park Ridge, Ill.
President-Elect, Touro M. Graber - - - - - - - - 450 Green Bay Rd., Kenilworth, Ill.
Secretary-Treasurer, Frank J. Krivanek - - - - - - - 212 S. Marion St., Oak Park, Ill.

Orthodontic Alumni Society of Columbia University

President, Harry Newman - - - - - - - - - - - 80 S. Grove St., Freeport, N. Y.
Vice-President, Francis J. Loughlin - - - - - - - - - 8559 168th St., Jamaica, N. Y.
Secretary, Edwin S. Sved - - - - - - - - 95 Carroll Pl., New Brunswick, N. J.
Treasurer, Jerome M. Sorrel - - - - - - - - - 263 West End Ave., New York, N. Y.

Harvard Society of Orthodontists

President, Milton J. Meyers - - - - - - - - 281 Haverhill St., Lawrence, Mass.
Vice-President, Clifford Hunt - - - - - - - - - - 14 Muzzy St., Lexington, Mass.
Secretary, Melvin Cohen - - - - - - - - - - - 300 Longwood Ave., Boston, Mass.
Treasurer, Bernard Rogell - - - - - - - - - - - 6 Pleasant St., Malden, Mass.

Iowa Orthodontic Society

President, E. H. Hixon - - - - - University of Iowa Dental School, Iowa City, Iowa
Vice-President, William Olin - - - - - - - - - University Hospital, Iowa City, Iowa
Secretary-Treasurer, Charles G. Sleichter - - 208 Savings & Loan Bldg., Iowa City, Iowa

Kansas State Orthodontic Society

President, Ray Woodworth - - - - - - - - - National Reserve Bldg., Topeka, Kan.
President-Elect, William M. Lathrop - - - - - - - 109 N. Kansas Ave., Norton, Kan.
Secretary-Treasurer, Howard H. Dukes - - - 754 Brotherhood Bldg., Kansas City, Kan.

New York Society for the Study of Orthodontics

President, Nathan J. Sachs - - - - - - - - - - - 84-75 168th St., Jamaica, N. Y.
Vice-President, Leon M. Gecker - - - - - - - - - 305 West 72nd St., New York, N. Y.
Secretary, Howard L. Apley - - - - - - - 363 East Old Country Rd., Hicksville, N. Y.
Treasurer, Jacob M. Golden - - - - - - - - 25 Central Park West, New York, N. Y.

New York University Orthodontic Society

President, Irwin R. Moton - - - - - - - - - - - 150-02 Hillside Ave., Jamaica, N. Y.
Vice-President, Ruben Schwager - - - - - - - - - 1890 E. Fifth St., Brooklyn, N. Y.
Secretary-Treasurer, Harry W. Reiser - - - - - 48-04 30th Ave., Long Island City, N. Y.

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*In the January issue of the AMERICAN JOURNAL OF ORTHODONTICS is published each year a list of the orthodontic societies of the world of which the JOURNAL has any record, along with the names and addresses of their principal officers.

The JOURNAL keeps a file for each of these societies and publishes the names that appear in that file as of the date of going to press.

Oklahoma Orthodontic Society

President, George Mindeman - - - - - - - - - 3621 S. Harvard Ave., Tulsa, Okla.
President-Elect, W. N. Flesher - - - - - - - Medical Arts Bldg., Oklahoma City, Okla.
Secretary-Treasurer, James S. Torchia - - - - - - - - - 1306 E. 35th, Tulsa, Okla.

Philadelphia Society of Orthodontists

President, James S. Krygier - - - - - - - - 1200 Delaware Ave., Wilmington, Del.
Secretary, Edward Cherkas - - - - - - 1807 Medical Tower Bldg., Philadelphia, Pa.

St. Louis Society of Orthodontists

President, William Brandhorst - - - - - - - - - 9827 Clayton Rd., St. Louis, Mo.
Vice-President, Quentin Ringenberg - - - - - Beaumont Medical Bldg., St. Louis, Mo.
Secretary-Treasurer, Robert E. Hennessy - - - - 8013 Maryland Blvd., St. Louis, Mo.

South Carolina Orthodontic Association

President, C. O. Wells, Sr. - - - - - - - - - - - Calhoun Towers, Greenville, S. C.
Vice-President, W. J. Brockington - - - - - - 1508 Washington St., Columbia, S. C.
Secretary-Treasurer, F. B. Hines, Jr. - - - - - - 1513 Hampton St., Columbia, S. C.

Orthodontic Section of Canadian Dental Association

Chairman, Joseph J. Schachter - - - - - - - - 209 Canada Bldg., Saskatoon, Sask.
Vice-Chairman, Vernon G. Fisk - - - - - - - 250 Lawrence Ave. W., Toronto, Ontario
Secretary-Treasurer, John G. Ryan - - - - - - - - 1330 Georgia, Vancouver, B. C.

Toronto Orthodontic Club

President, W. J. Spence - - - - - - - - - - - 3000 Yonge St., Toronto, Ontario
Vice-President, H. W. Shanks - - - - - - - - - 73 Warren Rd., Toronto, Ontario
Secretary-Treasurer, B. J. Levin - - - - - - - 51 Eglinton Ave. E., Toronto, Ontario

Charles H. Tweed Foundation for Orthodontic Research

President, Arthur V. Greenstein - - - - - - - - - 1 West 81st St., New York, N. Y.
Secretary-Treasurer, John S. Rathbone - - - - - 1808 State St., Santa Barbara, Calif.

Washington-Baltimore Society of Orthodontists

President, Louis Keren - - - - - - - - - - 5737 26th St., N.W., Washington, D. C.
President-Elect, Paul Dubansky - - - - - - - - Medical Arts Bldg., Baltimore, Md.
Secretary-Treasurer, Ashur G. Chavoor - - - - 1726 Eye St., N.W., Washington, D. C.

Foreign Societies

Sociedad Argentina de Ortodoncia

President, Hector F. Viale - - - - - - - - - Hipolito Yrigoyen 1284, Buenos Aires
Secretary, Carlos A. Nicora - - - - - - - - - - Gorriti 130, Lomas de Zamora
Treasurer, Fernando Archain -

Australian Society of Orthodontists

President, R. Y. Norton - - - - - - - - - - - - - - - 109 Elizabeth St., Sydney
Hon. Secretary, J. F. Reading - - - - - - - - - - - 149 Macquarie St., Sydney
Hon. Treasurer, N. J. Cox - - - - - - - - - - - - - - - - 49 Park St., Sydney

Sociedade Brasileira de Ortodoncia

President, Newton de Castro - - - - - - - - - - Rua Mexico 31, Rio de Janiero
Vice-President, Armando Werneck de Carvalho - - Rua Visc. Pirajá, III, Rio de Janiero
Secretary, Linneu Marcondes Silva - - - - - - Av. Alm. Barros 72, Rio de Janeiro

British Society for the Study of Orthodontics

President, D. P. Walther - - - - - - - - - Royal Dental Hospital, London, W. C. 2
Secretary, B. C. Leighton - - - - Dental Department, King's College, London, S. E. 5
Treasurer, J. S. Beresford - - - - - - - - - - - - - 101 Harley St., London, W. 1

Sociedad de Ortodoncia de Chile

President, Augusto Ramírez V. - - - - - - - - - Translavina 230, Vina del Mar
Vice-President, Juan Colin M. - - - - - - - - - Augustinas 715 of 111, Santiago
Secretary, Sergio Troncoso M. - - - - - - - - - - - Providencia 1017, Santiago
Treasurer, Pedro Gandulfo G. - - - - - - - - - - - - - Londres No. 63, Santiago

Sociedad Colombiana de Orthodoncia

President, León Múnera – – – – – – – – – – – – Carrera 12, No. 24-66, Bogotá
Vice-President, Guillermo Mayoral – – – – – – – – – Carrera 9, No. 52-A-46, Bogotá
Secretary-Treasurer, Matilde León – – – – – – – – – Carrera 12, No. 20-69, Bogotá

Asociación Odontologica de Costa Rica

President, Raymond Pauly S. –
Vice-President, Ramón Garcia V. –
Secretary, Jose J. Ulloa G. –
Treasurer, Norma Zeledón P. –

Cuban Association of Orthodontists

President, Juan Díaz Zayas-Bazán – – – – – – – – – 19 No. 376, Vedado, Havana
Vice-President, Luis G. Santamarina – – – Edif. L y 23, Apto C-10, Vedado, Havana
Secretary, Thais de los Santos – – – – – – – Calle L #353, Apto 1301, Vedado, Havana
Treasurer, Darío Gandarias – – – – – – – – – – Calle 25 #954, Vedado, Havana

Dutch Society for the Study of Orthodontics

President, K. G. Bijlstra – – – – – – – – – – – – Ant. Deusinglaan 1, Groningen
Vice-President, C. J. Sindram – – – – – – – – – – – Kenaustraat 4, Haarlem
Secretary, P. Gerbrands – – – – – – – – – – – – Kwekerijweg 17-B, Den Haag
Treasurer, W. H. S. Sypkens – – – – – – – – – Prins Hendrikstraat 2, Middelharnis

European Orthodontic Society

President, G. Maj – – – – – – – – – – – – – – – Via Marsili 15, Bologna, Italy
Vice-President, K. G. Bijlstra – – – – – – – Ant. Deusinglaan 1, Groningen, Holland
Hon. Secretary, D. P. Walther – – – – – – – Royal Dental Hospital, London, W. C. 2
Hon. Treasurer, H. E. Wilson – – – – – – – – – – 78 Harley St., London, W. 1

French Society of Dentofacial Orthopedics

President, J. Soleil – – – – – – – – – – – – – 191, Rue Nationale à Lille, Nord
Vice-President, J. Cauhépé – – – – – – – – – – – – – 3, Rue Picot, Paris 16
Secretary, B. Beck – – – – – – – – – 118, Rue du Maréchal Joffre, Colombes (Seine)
Treasurer, R. X. O'Meyer – – – – – – – – – – – 93, Rue du Commerce, Paris 15

Guatemalan Association of Orthodontics and Relative Sciences

President, Alfredo A. Morales – – – – – – – – – – 13 Calle 4-14, Guatemala City
Vice-President, Hernán Torres C. – – – – – – – – – 8a Calle 3-26, Guatemala City
Secretary, Enrique Estrada H. – – – – – – – – – – 11 Calle 10-61, Guatemala City
Treasurer, Augusto Hurtarte E. – – – – – – – – 4a Avenida 12-47, Guatemala City

Israel Orthodontic Society

President, H. Berger – – – – – – – – – – – – – – 69 Rothschild Blvd., Tel Aviv
Secretary, I. Bron – – – – – – – – – – – – – – – – – 30 Pinkas St., Tel Aviv
Treasurer, K. Bernstein – – – – – – – – – – – – – – – 96 Allenby Rd., Tel Aviv

Mexican Orthodontic Society

President, Alicia Lazo de la Vega – – – – – – – Av. Insurgentes 286-202, Mexico City
Secretary, Rutilio Blanco Sánchez – – – – – – – – Plaza Miravalle 2-900, Mexico City
Treasurer, Roberto Vivanco – – – – – – – – – – – Reforma 510-702, Mexico City

Norwegian Orthodontic Society

President, Olav Slagsvold – – – – – – – – – – – – – – Karl Johansgate 20, Oslo
Secretary-Treasurer, Aase Humerfelt – – – – – – – – – – – – Parkveien 60, Oslo

Sociedad Peruana de Ortodoncia

President, Arturo H. Koenig – – – – – – – – – Lord Nelson 240—Miraflores, Lima
Vice-President, Ricardo Salazar S. – – – – – – – – – – – – Pasaje Olaya 156, Lima
Secretary, Carlos Ganoza C. – – – – – – – – – – – – – – – – Camaná 615, Lima
Treasurer. Demetrio Calderón – – – – – – – – – – – – – Huancavelica 369, Lima

Spanish Society of Orthodontics

President, D. Costa del Río – – – – – – – – Av. del Generalísimo Franco, 353, Barcelona
Secretary, S. Alvarez Biosca – – – – – – – – – – – Av. José Antonio, 62, Madrid

Orthodontic Section of the Swedish Dental Society

President, Hugo Thörne - - - - - - - - - - - - - - - - Vanadisvägen 43, Stockholm
Secretary, Rune Filipsson - - - - - - - - - - - - - - - Odengatan 81, Stockholm
Allan Hellgren - Sveavägen 88, Stockholm
Georg Wallberg - Norbyvägen 15, Uppsala

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FOR SALE: Established Orthodontic practice in southwestern Pennsylvania, community of about 150,000. Modern two chair, air conditioned office. Practice established 38 years ago. Twin-wire and labio-lingual techniques. Reason for selling, ill health. Address inquiries to Box JC, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Missouri.

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PRECEPTORSHIP desired with an orthodontist in Eastern Massachusetts area. Seven years experience in private practice, mainly in Children's Dentistry. Limited experience in Orthodontia. Reply to Box ED, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Mo.

RETIRING—Edgewise practice for sale. Excellent area Northern Illinois. Formal training essential. Investigate this opportunity. All replies confidential. Reply to Box LV, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Mo.

Orthodontist for group practice in Southern California. Must have California Board's formal Edgewise training. Starting salary $18,000 per annum. Write Box LL, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Mo.

ORTHODONTIST in greater Miami area, would like university trained Twin-wire, Labio-lingual man for full-time association with option to buy practice. Reply to Box KM, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Mo.

ORTHODONTIST Cleveland, Ohio would like University trained Edgewise man for full-time association with option to buy practice. Reply to Box YZ, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Mo.

CALIFORNIA licensed orthodontist receiving Master's degree February, 1961, desires association, partnership, location, or purchase of practice in Los Angeles area. Trained in edgewise technique. Please reply to Box SS, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Missouri.

• I wish to retire or partially retire as soon as I can find either a buyer or an associate. One-man practice in Midwest. Annual gross nearly six figures. Reply to Box CF, American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Missouri.

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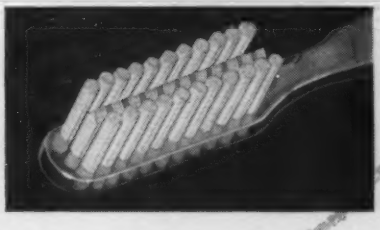
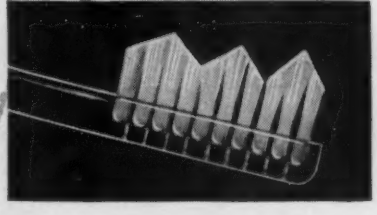
Note center row groove





Long tufts for picking; reaches last molar.

4-row, contoured

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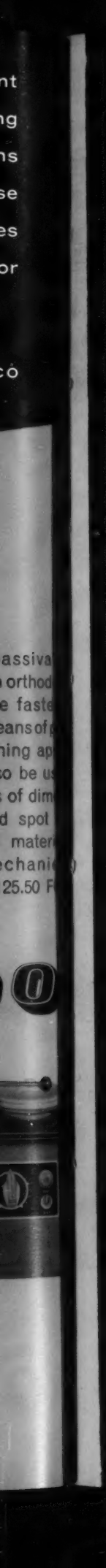
620



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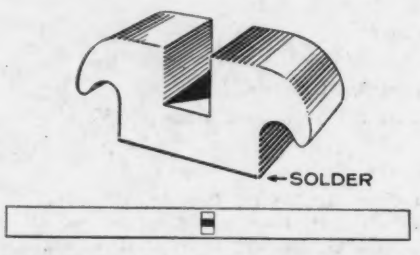
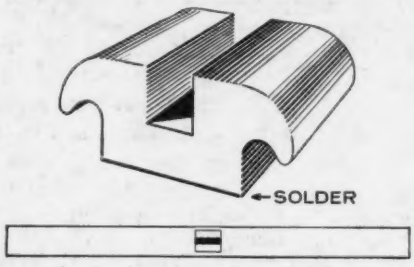
won't discolor in the mouth! can be used repeatedly!

S.S.White Edgewise Brackets

Anterior .050″ wide M 452S



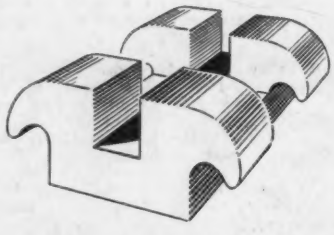
Posterior .100″ wide M 452AS



Pre-soldered Metalba* Edgewise Brackets are strong; remain clean in the mouth; can be soldered to; can be used on precious metal or Stainless Steel bands; and, used over and over again.

Divided Triple-width Edgewise Brackets

M 455



A convenient bracket for rotations as it provides two anchor points for ligatures. Supplied without solder to permit slight bending if required.

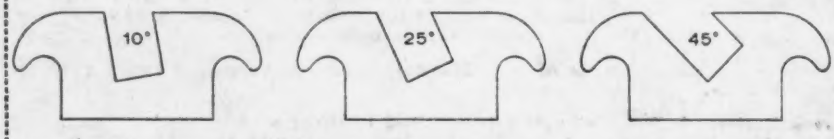
Anchor Tubes

M 474

Metalba* Anchor Tubes for use in connection with Torque Slot Edgewise Brackets. They are ¼ inch long, rectangular tubes, with a bore of .022 x .028. The side of the tube which is to be soldered to the band has a 10 degree angle to permit it to fit into the Torque Slot Bracket assembly.

*METALBA—platinum color, precious metal.

Torque slot, Divided Triple-width Edgewise Brackets



The angle of the wire slot in the Bracket gives direction to the Torque force of arch wire.

M 516	Torque 10°	Width	.140 inches
M 517	Torque 10°	Width	.180 inches
M 518	Torque 25°	Width	.180 inches
M 519	Torque 45°	Width	.180 inches

METALBA
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